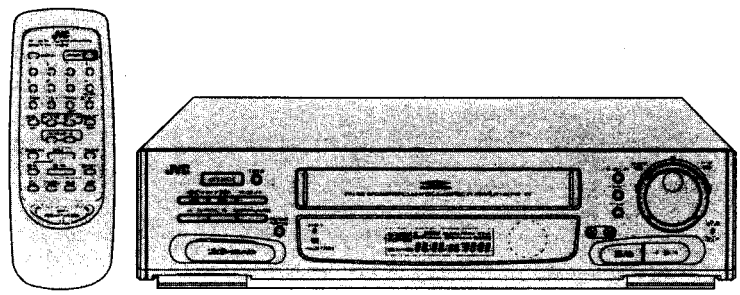
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J417MS



VHS
PAL NTSC

SPECIFICATIONS

GENERAL

Power requirement		: AC 110 – 240 V~, 50/60 Hz
Power consumption		: 18 W
Temperature		
	Operating	: 5°C to 40°C
	Storage	: –20°C to 60°C
Dimensions (WxHxD)		: 400 x 94 x 348 mm
Weight		: 4,8 kg
Format		: VHS standard
Maximum recording time	(SP)	: 240 min. with E-240 video cassette (PAL/MESECAM)
		: 160 min. with T-160 video cassette (NTSC)
	(LP)	: 480 min. with E-240 video cassette (PAL/MESECAM)
	(EP)	: 480 min. with T-160 video cassette (NTSC)

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
	: NTSC colour and EIA monochrome signals, 525 lines/60 fields
Recording/Playback System	: DA-4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	: 45 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 240 lines (PAL) 220 lines (NTSC)
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: RCA connectors (IN x 1, OUT x 1)

TUNER/TIMER

TV channel storage capacity		: 48 positions (+ AUX position "AU")
Channel coverage		: VHF (Low) 48.5 – 92 MHz
		CH 1 – 5 (China, Russia)
		CH E2 – E4 (Europe)
		CH 2 – 6 (U.S.A.)
		VHF (High) 104 – 300 MHz
		CH 6 – 12 (China, Russia)
		CH E5 – E12 (Europe)
		CATV Channels
		CH 7 – 13 (U.S.A.)
	Hyper	300 – 470 MHz
		CATV channels
	UHF	470 – 870 MHz
		CH 13 – 57
		(China, Russia)
		CH E21 – E69 (Europe)
		CH 21 – 69 (U.K.)
		CH 14 – 69 (U.S.A.)
Aerial output		: UHF channels E32 – E40 (adjustable)
Programme capacity		: 1-year/8-programme timer
Memory backup time		: Minimum 3 min.

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R03/UM-4" battery x 2, Conversion plug*, AC power cord

** Conversion plug is not provided for units sold in Singapore.*

Design and specifications subject to change without notice.

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No. 82442
October 1994

Note: "MS/A" in this manual means for Singapore.

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Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

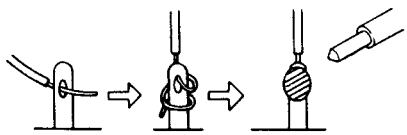


Fig. 1

7. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10—15 kg of force in any direction will not loosen it.

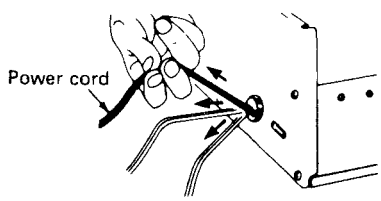


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

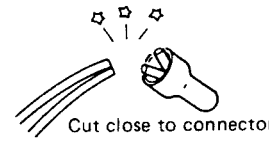


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

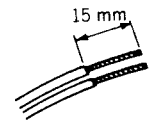


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

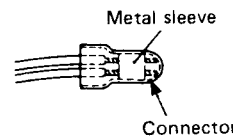


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

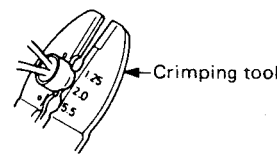


Fig. 6

(5) Check the four points noted in Fig. 7.

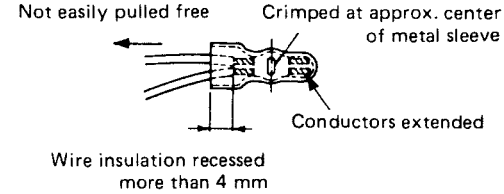

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

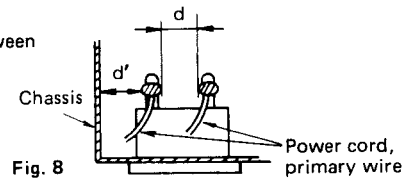


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

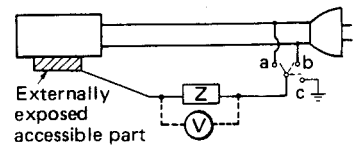


Fig. 9

5. Grounding (Class I model only)

Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).

Measuring Method:

Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

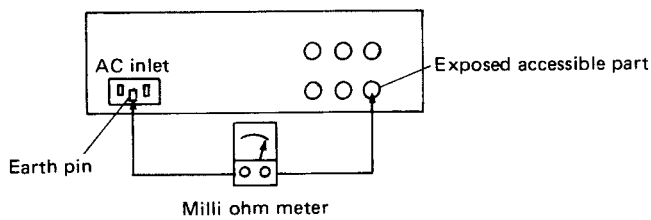


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

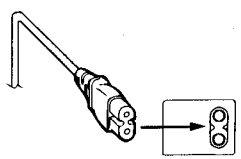
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.
- Use the conversion plug depending on the type of your AC wall outlet.

ATTENTION

1. This recorder can also receive SECAM colour television signals for recording and playback.
2. Recordings made of SECAM television signals produce monochrome pictures if played back on another video recorder of SECAM standard, or do not produce normal colour pictures if played back on another video recorder of PAL standard.
3. SECAM prerecorded cassettes or recordings made with a SECAM video recorder produce monochrome pictures when played back with this recorder.

IMPORTANT:

- It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

POWER SYSTEM
This set operates on voltage of AC110 – 240 V~, 50/60 Hz with automatic switching.

Video tapes recorded with this video recorder in the LP (Long Play) or EP (Extended Play) mode cannot be played back on a single-speed video recorder.

VHS PAL NTSC HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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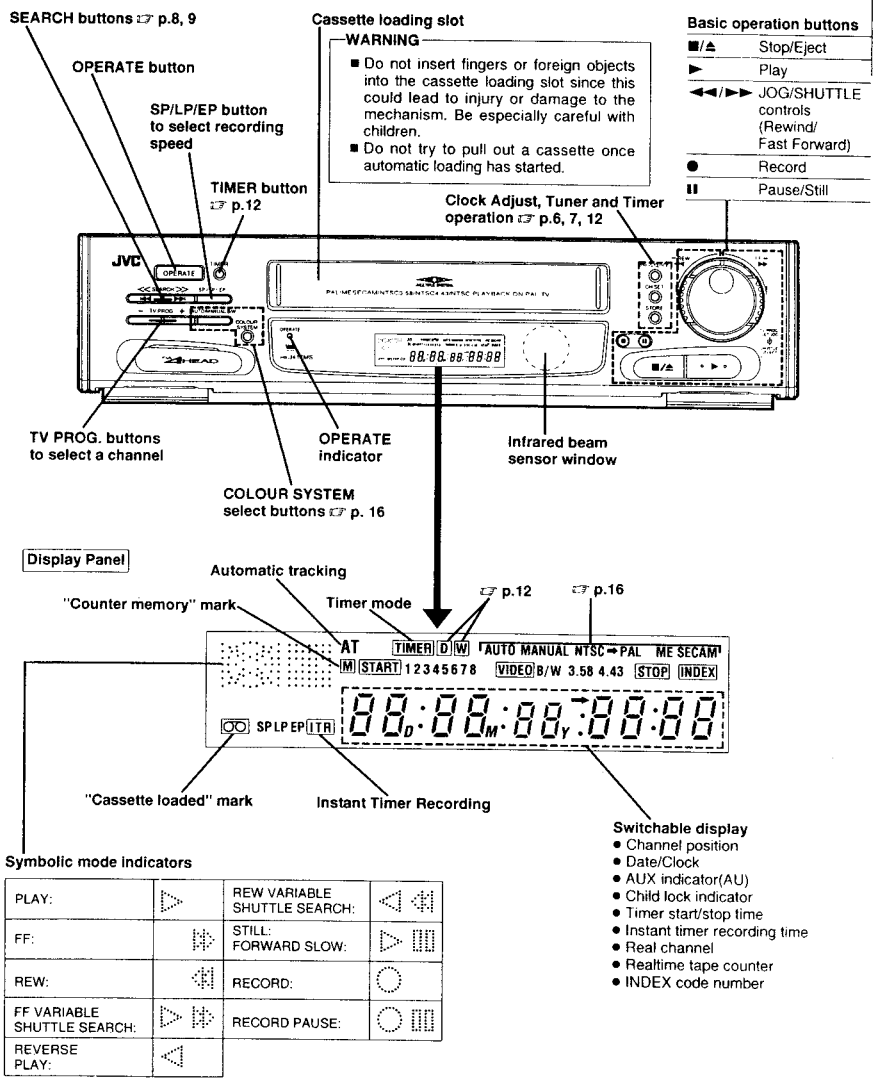
Controls And Indicators

Front Panel

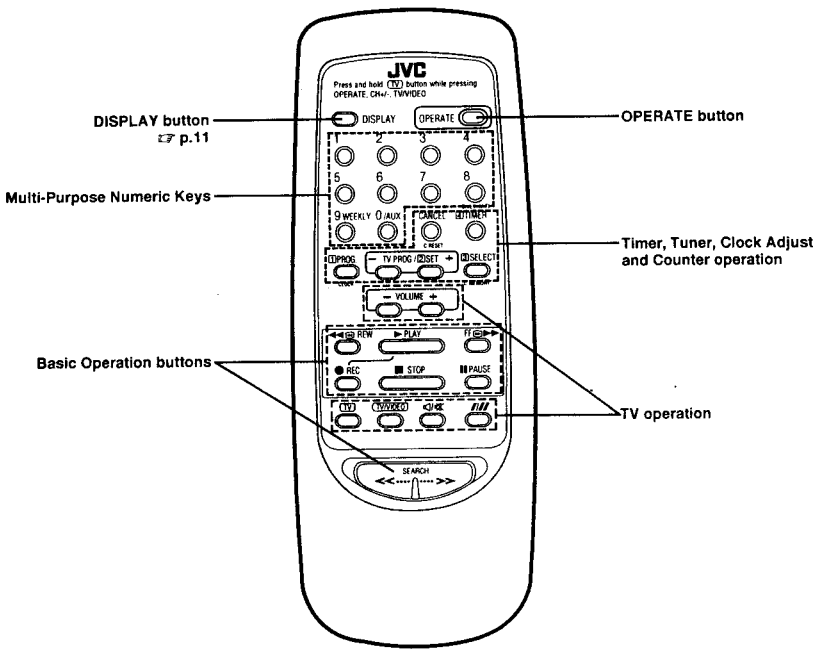

SEARCH buttons ☞ p.8, 9
OPERATE button
SP/LP/EP button to select recording speed
TIMER button ☞ p.12
Cassette loading slot
WARNING
■ Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
■ Do not try to pull out a cassette once automatic loading has started.
Clock Adjust, Tuner and Timer operation ☞ p.6, 7, 12
Basic operation buttons
■/⏏ Stop/Eject
► Play
◄◄/►► JOG/SHUTTLE controls (Rewind/ Fast Forward)
● Record
❚❚ Pause/Still
JVC
TV PROG. buttons to select a channel
OPERATE indicator
COLOUR SYSTEM select buttons ☞ p. 16
Infrared beam sensor window
Display Panel
Automatic tracking
"Counter memory" mark
Timer mode
☞ p.12
☞ p.16
AT TIMER D W AUTO MANUAL NTSC➡PAL ME SECAM
M START 1 2 3 4 5 6 7 8 VIDEO B/W 3.58 4.43 STOP INDEX
SP LP EP ITR
"Cassette loaded" mark
Instant Timer Recording
Switchable display
• Channel position
• Date/Clock
• AUX indicator(AU)
• Child lock indicator
• Timer start/stop time
• Instant timer recording time
• Real channel
• Realtime tape counter
• INDEX code number

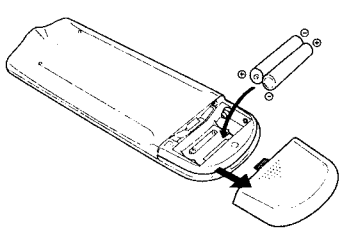
Symbolic mode indicators

PLAY:	▷	REW VARIABLE SHUTTLE SEARCH:	◁ ◁◁
FF:	▷▷	STILL: FORWARD SLOW:	▷ ▷▷▷
REW:	◁◁	RECORD:	○
FF VARIABLE SHUTTLE SEARCH:	▷ ▷▷	RECORD PAUSE:	○ ○▷▷▷
REVERSE PLAY:	◁		

Controls And Indicators (cont'd)

Wireless Remote Control





Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R03/UM-4"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use

The remote control can operate most of your video recorder's functions, as well as basic functions of designated JVC TV sets.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

TV Operation

You can also use the recorder's remote control to operate a JVC television.

To operate your TV, press and hold down the TV button while you press OPERATE, or TV PROG. +/–, or TV/VIDEO, or VOLUME +/–, or DISPLAY (for the TV's on-screen display function), or ///// (to select either Main or Sub programmes), or ◁/🔇 (to mute the TV's sound).

- TV channel cannot be changed using the numeric keys.

Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.

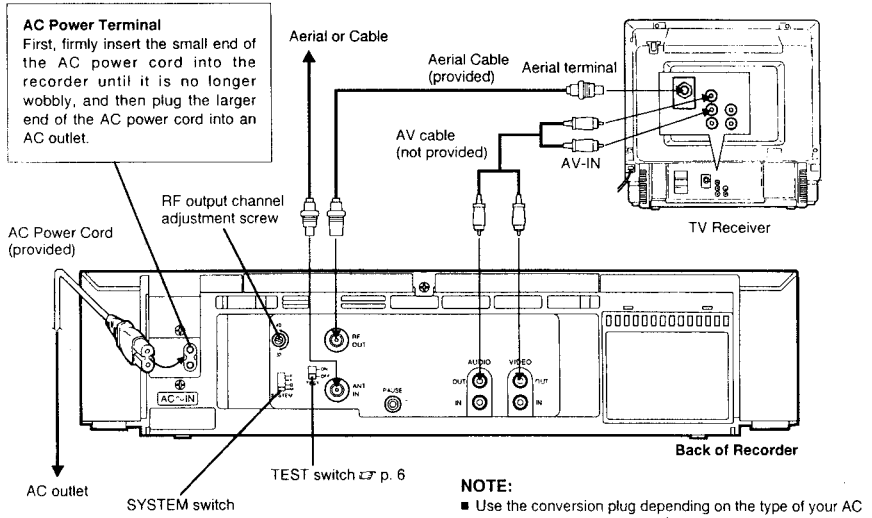
AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's AV-IN terminals.

AC Power Terminal

First, firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.



NOTE:

- Use the conversion plug depending on the type of your AC wall outlet.

B SELECT TELEVISION SYSTEM

Set the SYSTEM switch to the appropriate position according to your TV system. (Refer to the chart on the right.)

NOTES:

- If no colours appear on the screen when using a multi-system television with its system select switch set to AUTO, change the switch position to correspond to the recorder's RF system select switch (K, I, G or M).
- For more information on multi-system compatibility, ☞ p.15.

Major countries	Colour TV broadcast system	Switch position
China, Mongolia	PAL D/K	K
Russia	SECAM D/K	
Hong Kong	PAL I	I
Indonesia, Singapore, Thailand, Malaysia	PAL B/G	G
Iran, Saudi Arabia, Egypt, Morocco	SECAM B/G	
U.S.A., Japan, S. Korea, Taiwan	NTSC M	M

Continued on next page.

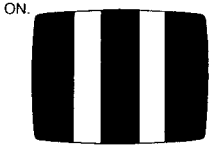
Connections (cont'd)

C ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL

1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Press TV/VIDEO to engage the VIDEO mode.
4. Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.

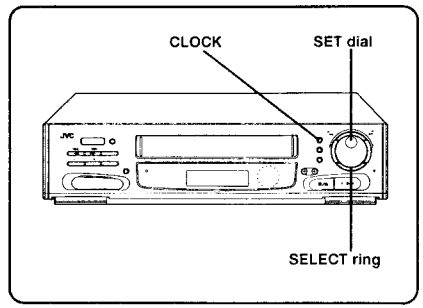


5. Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
6. Reset the TEST switch to OFF.

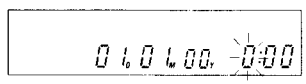
NOTE:
If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

IMPORTANT:
To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Setting The Clock

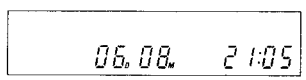


1. **Press CLOCK.**



Recorder's Display Panel

2. **Turn the inner dial (SET) in either direction to set the hour, then turn the outer ring (SELECT) to the right and release it.**
3. **Repeat step 2 to set the minute, day , month and year.**
4. **Press CLOCK.**



TO MAKE CORRECTIONS

1. Turn the SELECT ring in either direction to make the item you want to change blink.
2. Turn the SET dial in either direction to change the data.

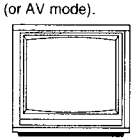
POWER FAILURE INDICATOR

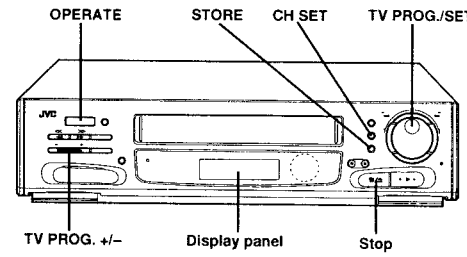
The clock resets to "0:00" and starts blinking when there has been a power failure. Reset the time to return the clock display to normal.

NOTES:
- You can also use the remote control's SET and SELECT buttons to set the clock. Press these buttons instead of turning SET dial and SELECT ring.
- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.

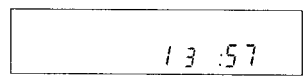
Setting The Tuner

Turn on the TV:
Select VIDEO channel
(or AV mode).

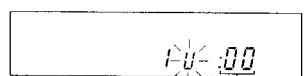




1. **Press OPERATE to turn on the recorder.**
2. **Press TV/VIDEO on the remote control to engage the VIDEO mode.**
3. **Keep CH SET pressed until the display panel shows the following.**

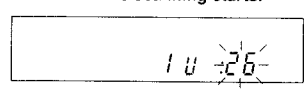


4. **Press CH SET.**
   - The band indicator will blink.
5. **Turn the SET dial to select "1", "3", or "U".**
   "1", "3" : VHF band "U" : UHF band

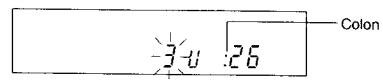


Tuning voltage giving a rough reference of where tuning is being performed in the corresponding band.

6. **Press CH SET.**
   - The tuning voltage indicator will blink.
7. **Keep TV PROG. + pressed for a few seconds until automatic scanning starts.**



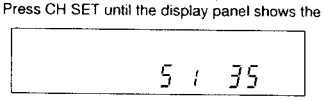
   - When a broadcast is detected, automatic scanning stops.
   - If you don't want to store the detected TV station, repeat step 6 for another station.
8. **Press CH SET.**
9. **Turn the SET dial in either direction to select the tuner channel position where you wish to store that TV station.**



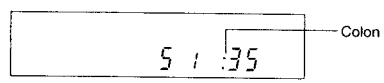
10. **Press STORE.**
    - The TV station will be stored and the colon will disappear.
11. **Repeat steps 5 through 10 for other receivable TV stations.**
12. **Press Stop to disengage the channel set mode.**

TO DELETE STORED CHANNELS

1. Turn the TV PROG. dial in either direction to select the channel position you want to skip.
2. Press CH SET until the display panel shows the following.

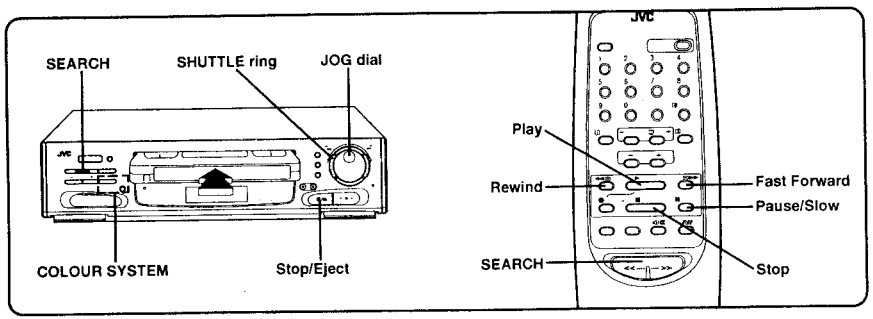


3. Press CANCEL on the remote control.



   - The colon will appear and channel position 5 can no longer be chosen by the TV PROG. buttons.
4. Press Stop to disengage the Channel Set mode.

Playback



Basic Operations

Preparation

- Turn on the TV.
- Select VIDEO channel (or AV mode).

1. **Load a cassette.**
   - The recorder power will come on automatically.
   - The counter will be reset to "0:00:00" automatically.
   - If the safety tab on the cassette is removed, playback will start automatically.
   - Select the appropriate colour system by pressing the COLOUR SYSTEM buttons.(☞ p. 16)
2. **Press Play to start playback.**
3. **Press Stop to stop playback.**
   - To rewind the tape, press Rewind.
   - To fast-forward the tape, press Fast Forward.
   - To rewind or fast-forward the tape using the recorder's control, turn the SHUTTLE ring fully to the corresponding direction, and release it.
   - To stop rewind or fast-forward, press Stop.
4. **Press Stop/Eject on the recorder to eject the tape.**

Variable-Speed/High-Speed Search, Still Playback/Frame Advance/Forward Slow Motion

During Playback or Still:

- Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:

- Press Fast Forward for high-speed forward search, or Rewind for high-speed reverse search.
- For short searches, keep Fast Forward or Rewind pressed for more than 2 seconds. When released, normal playback will continue.
- Press Pause/Slow to view a still picture.
- Press again to advance the picture frame by frame.
- Press Pause/Slow for 2 seconds for slow motion.

Other Functions

JOG/SHUTTLE Control

You can view pictures in slow to fast motion, or frame-by-frame.

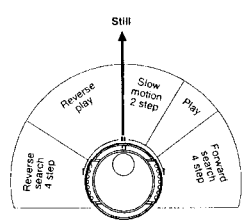
During Playback or Still:

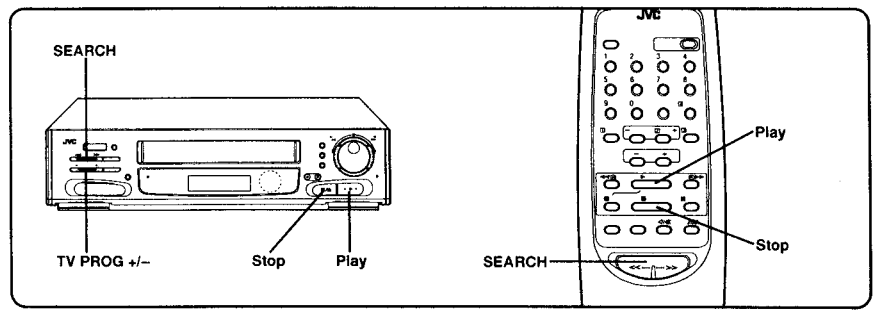
1. Turn the outer ring (SHUTTLE) in either direction. The farther the ring is rotated, the faster the search speed. Releasing the ring stops the picture in the Still mode.
   - For fast-forward with a visible picture, turn the SHUTTLE all the way to the right and release it within 1 second.
   - For rewind with a visible picture, turn the SHUTTLE all the way to the left and release it within 1 second.
   - Slow motion is not possible in the reverse direction.

During Playback or Still:

1. Turn the inner dial (JOG) clockwise for jog control. The tape moves forward frame-by-frame at the speed with which the dial is turned.
   - Frame-by-frame playback is not possible in the reverse direction.
   - By rotating the JOG dial counterclockwise at 2 revolutions per second or faster, reverse play is possible.

To resume normal playback, press Play button.





Manual Tracking

Your video recorder is equipped with automatic tracking control. If you wish to adjust tracking manually, you can override this function.

During Playback:

1. Press the recorder's TV PROG. + and – buttons simultaneously.
2. Press TV PROG. + or – to adjust tracking.
   - Press TV PROG. + and – simultaneously to return to automatic tracking.

During Slow:

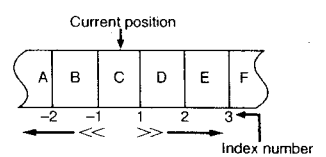
1.Simply press TV PROG.+ or – to adjust tracking.

Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

During Stop:

1. Press SEARCH << or >>. "INDEX –1" or "INDEX 1" will be displayed on the display panel and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press SEARCH repeatedly until the correct index number is displayed.
   Ex.: To locate the beginning of B from the current position, press SEARCH << twice.
   To locate the beginning of D from the current position, press SEARCH >> once.



- When the specified index code is found, playback will start automatically

Repeat Playback

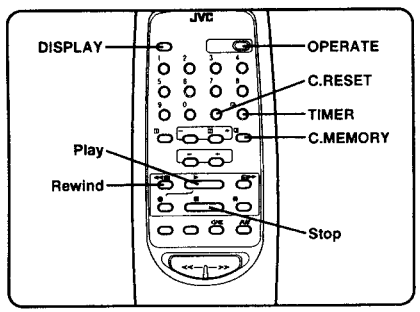
During Playback:

1. Press Play for more than 5 seconds, and release.
   - The Play indicator (▷) on the display panel will blink slowly.
   - The tape will be played all the way to the end 20 times automatically, and then stop.
2. To stop playback at any time, press Stop.

NOTES:

- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the TV PROG. buttons to correct the picture.
- During search playback, some noise bars will appear.
- When playing back LP recordings or NTSC recordings in the search, still, or frame-by-frame playback mode, the picture will be distorted, and there will be a loss of colour.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.
- To adjust tracking manually with the remote control, first press the /// button and then press TV PROG. – or +. Press the /// button again to return to automatic tracking.

Playback (cont'd)



Other Functions (cont'd)

Counter Memory

During Playback:

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
3. Press C.MEMORY.
   - The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   - The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

Your recorder can memorise what to do after rewind.
During Stop:

For automatic start of playback after the tape is rewound:

1. Press Rewind.
2. Press Play within 2 seconds.

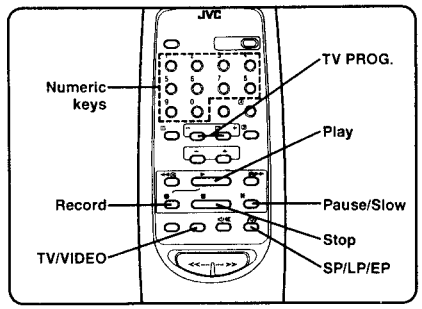
For automatic power off after the tape is rewound:

1. Press Rewind.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:

1. Press Rewind.
2. Press TIMER within 2 seconds.

Recording



Basic Operations

Preparation

- Turn on the TV.
- Select VIDEO channel (or AV mode).

***1.* Load a cassette.**
- The recorder power will come on automatically. Be sure that the VIDEO indicator is lit; if not, press TV/VIDEO so that it lights.
- Select the appropriate colour system by pressing the COLOUR SYSTEM buttons.(☞ p.16)

***2.* Press TV PROG. or the numeric keys to select the channel you wish to record.**
- You can also use the recorder's JOG dial to select the channel.

***3.* Press SP/LP/EP to select the tape speed.**

***4.* Press Record and Play simultaneously.**

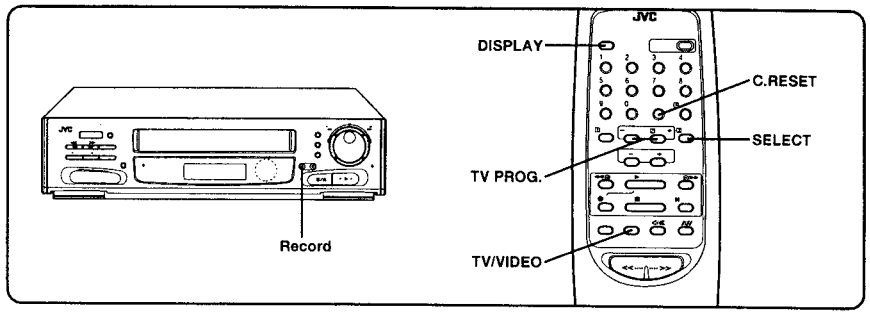
***5.* Press Pause/Slow to pause recording.**

***6.* Press Play to resume recording.**

***7.* Press Stop to stop recording.**

NOTES:

- To start recording with the recorder's Record button, press it once on its own.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's safety tab has been removed.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.



Other Functions

To Watch Another Programme While Recording

During Record:

1. Press TV/VIDEO. The VIDEO indicator on the display panel and the TV broadcast being received will disappear.
2. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.
During Record:

1. Press recorder's Record. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press Record again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and TV PROG. buttons to set the exact time required (possible up to 8 hours and 59 minutes).

Elapsed Recording Time Indication

When you need to know the exact time of a recording.

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Display Button

When you wish to check the time, date, or counter reading

1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the counter reading.

Usable Cassettes And Their Recording Times

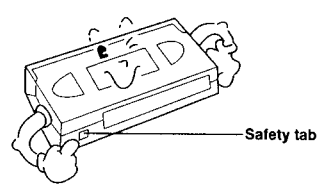
This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS video signals only. It is not possible to play back a recorded Super VHS tape.

Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	LP Speed	
E-240	240	480	PAL/MESECAM
E-180	180	360	PAL/MESECAM
E-120	120	240	PAL/MESECAM
E-90	90	180	PAL/MESECAM
E-60	60	120	PAL/MESECAM
E-30	30	60	PAL/MESECAM

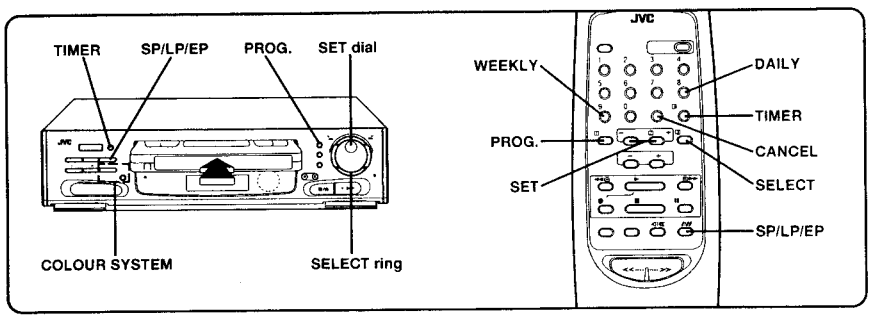
Type of Cassette	Recording/Playback Time (minutes)		Recording/ Playback System
	SP Speed	EP Speed	
T-160	160	480	NTSC
T-120	120	360	NTSC
T-90	90	270	NTSC
T-60	60	180	NTSC
T-30	30	90	NTSC

Special Note On Video Cassettes

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Timer-Recording

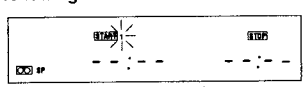


Timer programming can be done while referring to the recorder's display panel. Make sure that the display panel shows the correct current time.

Preparation

Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- Select the appropriate colour system by pressing the COLOUR SYSTEM buttons. (☞ p. 16)

1. Press PROG. until the display panel shows the following.



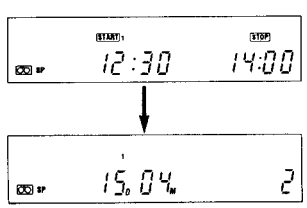
Recorder's Display Panel

- You are ready to input data into Program No. 1.
- To change the program number, press PROG.

2. Turn the SELECT ring to the right and release it.

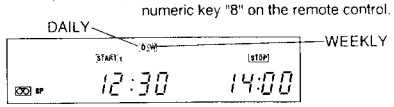
3. Turn the SET dial in either direction to set the start hour, and then turn the SELECT ring to the right and release it.

4. Repeat step 3 to set the minute and stop time, day, month and channel.



- The current program number will blink.
- If you need to set another program, repeat steps 1 through 4.

WEEKLY program : During steps 1 through 4, press numeric key "9" on the remote control.
DAILY (Mon. – Fri.) : During steps 1 through 4, press numeric key "8" on the remote control.



5. Press SP/LP/EP to select the tape speed.

6. Press TIMER.

- The recorder will enter the Timer mode and power will go off.

TO MAKE CORRECTIONS

1. Turn the SELECT ring in either direction to make the item you want to change blink.
2. Turn the SET dial in either direction to change the data.

TO CHECK AND CANCEL PROGRAMS

To check preset programs:
1. Press PROG. until the program settings are displayed.
   - Program 1 is displayed with the number blinking.
2. Turn the SELECT ring to the right and release it to review the program contents in succession.
3. To check another program, press PROG. again.

To cancel the program:
4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.
- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

NOTE:
- You can also use the remote control's PROG., SET, SELECT, TIMER and CANCEL buttons for timer operation. Press SET and SELECT buttons instead of turning SET dial and SELECT ring.

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

- "TIMER" and "📼" on the display panel continue blinking.
WHY: There is no cassette in the recorder.
WHAT TO DO: Insert a cassette.

- The cassette is automatically ejected. "TIMER" and "📼" continue blinking.
WHY: The inserted cassette has its safety tab removed.
WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞ p.11.

- "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.
WHY: There are no preset programs in memory, or they have all been incorrectly preset.
WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

- "TIMER" steady lit (with clock display).
WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

- "◯" and "TIMER" steady lit.
WHY: Normal display while timer-recording is in progress.

- The cassette was ejected, with power off and "TIMER" and "📼" are blinking.
WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

- "0:00" blinking.
WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
WHAT TO DO: Set the clock. ☞ p.6.
- If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

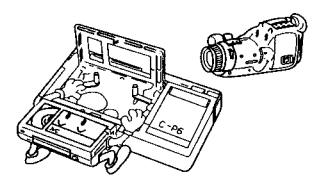
Other Functions

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording...
1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:
- While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

To Watch A Compact VHS Tape



Compact VHS camcorder recordings (PAL/NTSC) can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.

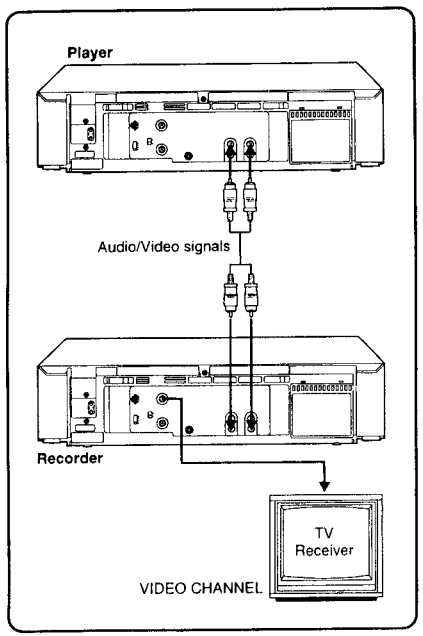
Special Note On Head Cleaning

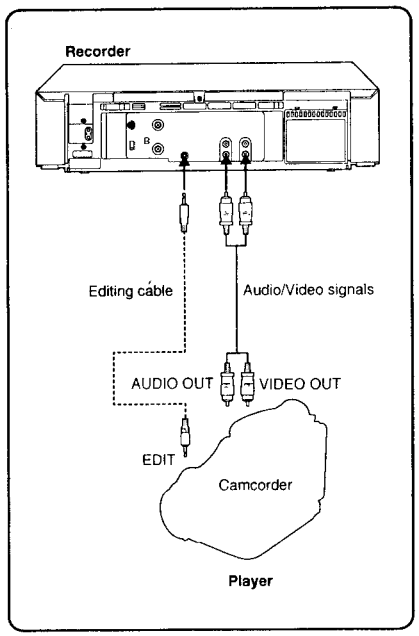
Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.

Auto Head Cleaner

A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

Editing





Editing To/From Another Recorder

Preparation

Connect the player's AUDIO and VIDEO OUT connectors to the recorder's AUDIO and VIDEO IN connectors.

1. **Select the recorder's external input mode.**
   - With this video recorder, press the numeric key "0". "AU" will appear instead of a channel number.
2. **Put the player in the Play mode.**
3. **Put the recorder in the Record mode.**

NOTES:

- NTSC tapes being played back in the NTSC → PAL (PLAYBACK) mode (☞ p.17) cannot be dubbed to another recorder.
- When you dub an NTSC tape using your recorder as the playback deck, select MANUAL NTSC 3.58 (or 4.43) with the COLOUR SYSTEM button. (☞ p.16)
- When you use your recorder as the recording deck, select the recording tape speed with the SP/LP/EP button.

Editing From A Camcorder

Preparation

Connect the camcorder's AUDIO and VIDEO OUT connectors to the recorder's AUDIO and VIDEO IN connectors.

1. **Select the recorder's external input mode by pressing numeric key "0". "AU" will appear instead of a channel number.**
2. **Put the camcorder in the Play mode.**
3. **Put the recorder in the Record mode.**

NOTE:

- If the camcoder is equipped with the Master Edit Control system, you can control the recorder using the comcoder's controls See the camcorder's instruction manual for operating procedure.

IMPORTANT:

- To edit, both the player and the recorder must be of the same colour system. Press your recorder's COLOUR SYSTEM button to select the appropriate colour system.
- PAL, SECAM and NTSC camcorders can be used as a player for editing.
- For more information on multi-system compatibility, ☞ p. 15.

Information On Multi-System Compatibility

World's Colour TV Broadcasting Systems

This recorder incorporates the circuitry necessary to record or play back PAL, SECAM and NTSC signals from most TV broadcasting systems in the world.

Multi-system compatibility

Colour System	PAL			SECAM			NTSC	
Broadcasting System	B/G	D/K	I	B/G	D/K	L*1	M	—
Recording & Reception System	PAL	PAL	PAL	MESECAM	MESECAM	SECAM	NTSC 3.58	NTSC 4.43*2
Major Countries	Germany, Austria, Italy, Kuwait, U.A.E., Singapore, Malaysia, Indonesia, Thailand, India, Australia	China, Mongolia, Rumania	United Kingdom, Hong Kong	Saudi Arabia, Lebanon, Iran, Iraq, Egypt, Morocco, Greece	Ivory Coast, Russia, Bulgaria, Czech Rep., Slovakia, Poland	France	U.S.A., Canada, Japan, S. Korea, Taiwan, Philippines, Mexico	—

*1 It is not possible to receive and record SECAM L broadcasts with this recorder.
*2 In the case of NTSC 4.43 recordings, only tape-to-tape dubbing, by using a video cassette recorder capable of playing back NTSC 4.43 recordings, is possible.

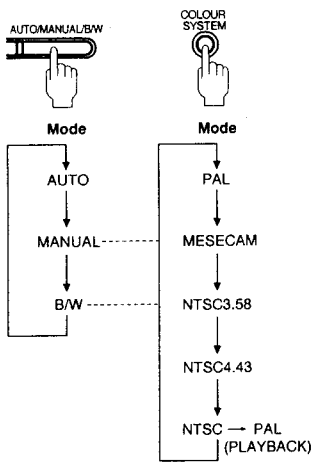
PAL, SECAM, MESECAM, And NTSC

- PAL, SECAM and NTSC are three different colour TV systems.
- MESECAM is the designation for tapes with SECAM signals that have been recorded on MESECAM-capable PAL recorders.

Information On Multi-System Compatibility (cont'd)

Setting Of The Colour System Select Buttons

- Use these two buttons on the recorder's front panel to select the colour system. Pressing the buttons changes the modes as illustrated below. An indicator on the display panel will show which mode is selected.
- Usually the COLOUR SYSTEM button is used only when the AUTO/MANUAL/B/W button is set to MANUAL or B/W (Black & White). However, when NTSC recording or playback is being done, set the COLOUR SYSTEM button to the appropriate mode (NTSC3.58/NTSC4.43/NTSC→ PAL(PLAYBACK)) even if the AUTO/MANUAL/B/W button is set to AUTO.

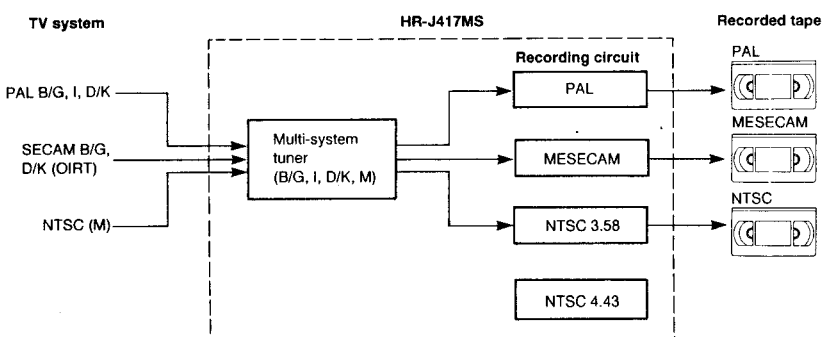


Mode Display	Description
AUTO (Colour Signal)	Usually set to this mode. This mode automatically detects and adjusts to the colour system being recorded or played back. When it does not perform properly, set the colour system manually.
MANUAL (Colour Signal)	For recording, there is a choice of 4 selectable modes; PAL/MESECAM/NTSC3.58/NTSC4.43. Use the COLOUR SYSTEM button to select the mode that matches the colour signal being received. For playback, there is an additional mode which allows NTSC tapes to be played back and viewed on PAL TVs.
B/W	Use this mode when recording or playing back a black & white programme, or for recording or playing back colour signals in black & white. Choose the appropriate COLOUR SYSTEM button setting, in the same way as with the MANUAL mode.

NOTE:
- When SECAM signals are being received in the AUTO mode, "MESECAM" will be displayed on the display panel.

Off-Air Recording

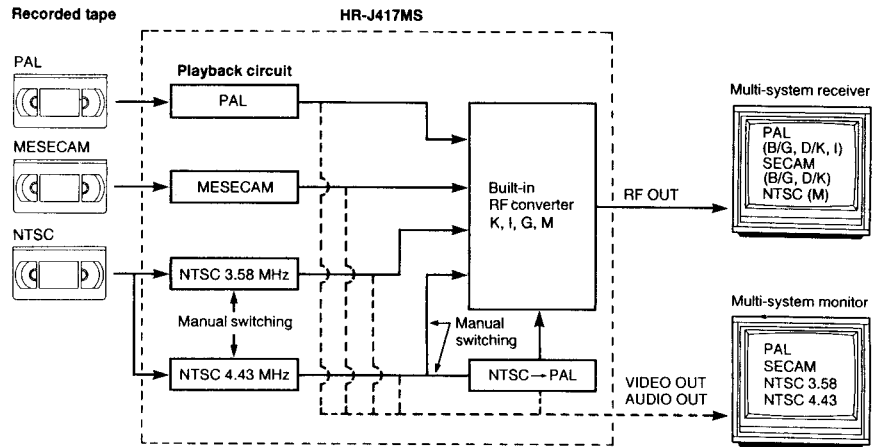
The built-in multi-system tuner is capable of receiving PAL B/G, I and D/K, and SECAM B/G and D/K, and NTSC broadcasts.



NOTE:
- This model does not operate in BRAZIL (PAL-M) or ARGENTINA (PAL-N).

Playback

This recorder can play back all 3 types of recorded tape.

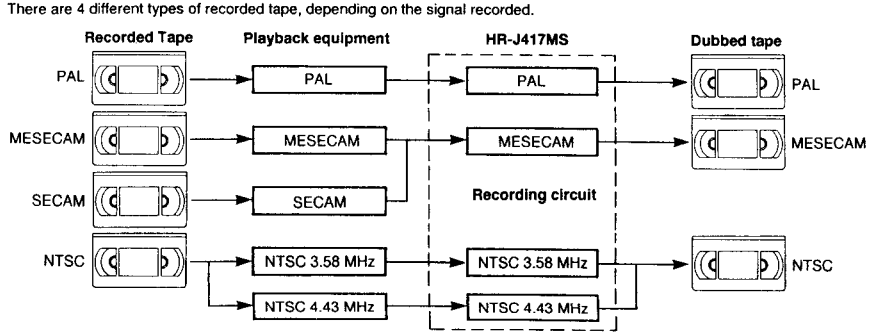


NOTES:
- When viewing NTSC tapes on a PAL TV set:
  - The picture may shrink vertically with black bars appearing at the top and bottom of the screen. This is not a malfunction on the part of the video recorder nor the TV.
  - The picture may roll up or down. This can be corrected using the V-HOLD control found on most TVs. (This cannot be corrected if the TV does not have a V-HOLD control.)
  - During search, still, or frame-by-frame playback, the picture will be distorted, and there may be loss of colour.

ATTENTION:
When this recorder is connected to a multi-systemTV, it may happen that no colours appear on the screen if the colour system select switch of the TV is adjusted to the AUTO position. In such a case, change the setting of the colour system select switch of the TV to the position which corresponds to the setting (K, I, G, M) of the RF converter system select switch on the rear panel of the recorder.

Tape-To-Tape Editing

There are 4 different types of recorded tape, depending on the signal recorded.



Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

When transporting

- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Beware of moisture condensation

Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

Place cassettes in cassette cases and store vertically.

ATTENTION:

This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

In Case Of Difficulty

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	■ Is the power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Tape stops during rewind or fast-forward.	■ Is the C. MEMORY button pressed? — Press again to make "M" disappear from the display panel.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	■ Is a cassette loaded? ■ Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape.
TV broadcasts cannot be recorded.	■ Has "AU" been selected? — Set to the desired channel.
Tape-to-tape editing or camera recording is not possible.	■ Is the camcorder or another video recorder correctly connected? ■ Are all necessary power switches turned ON? ■ Has "AU" been selected? — Set to "AU".
Timer recording is not possible.	■ Have you set the clock correctly and programmed the timer correctly? — Check once again. ■ Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	■ If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (UHF 36). (☞ p.6) ■ If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Noise appears during visual search.	■ This is normal.
Noise appears during normal or slow-motion playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞ p.9)
Playback picture is blurred or interrupted while TV broadcasts are clear.	■ Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer. (☞ p.13).
No sound accompanies the playback picture.	■ Is the SYSTEM switch set to the correct position? — Set it to the correct position for the TV broadcast system used in your area. (☞ p.5)

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	■ Move camcorder or camera's microphone away from TV or reduce TV sound volume.
Channel cannot be switched.	■ Is recording in progress? — Press the Pause/Slow button, change the channel, and press the Play button.
Remote control does not function.	■ Are the batteries discharged? — Replace with new ones.
"Snowy picture" on screen when viewing TV programmes while recording another programme.	■ Is the VIDEO indicator lit on the display panel? — Press the TV/VIDEO button so that the indicator extinguishes.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1.Take Out 4 screws Ⓐ and a screw Ⓑ .
2.To remove the top cover,slide in direction of arrow and lift away.

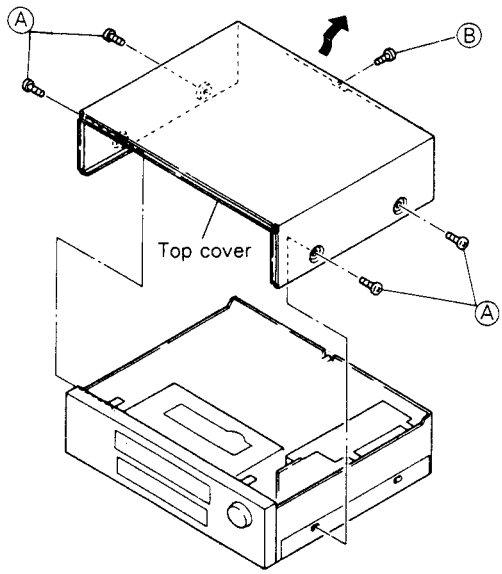


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1.Remove the top cover.
2.Carefully disengage 2 tabs ⓐ and 2 tabs ⓓ of the front panel assembly from the upper and both side of the chassis.
3.Pull the front panel assembly toward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis then disconnect a connector Ⓒ .
4.Remove the front panel assembly.

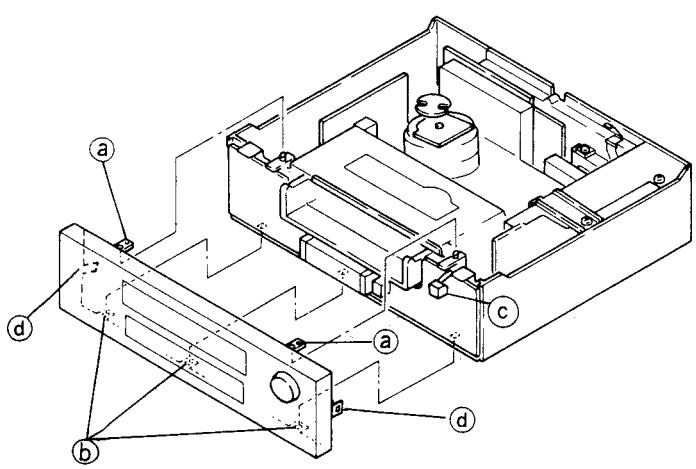


Fig.1-1-2 Front panel assembly

1.1.3 Bottom cover

1.Remove the top cover.
2.Disengage 7 claws ⓐ from the bottom of the chassis.
3.Disengage the bottom cover from the bottom of the chassis.

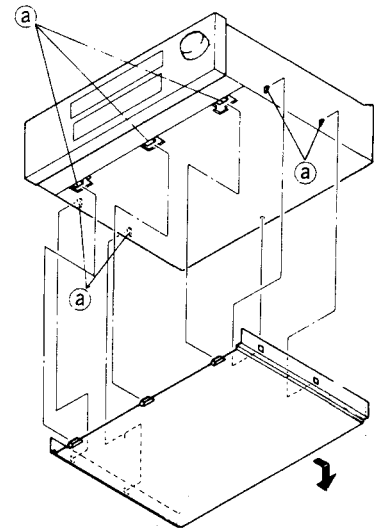


Fig.1-1-3 Bottom cover

1.1.4 FRONT board assembly

1.Remove the top cover and front panel.
2.Disengage 6 claws ⓐ from the chassis.
3.Disengage 6 claws ⓑ,then remove the FRONT board assemby in direction of arrow.

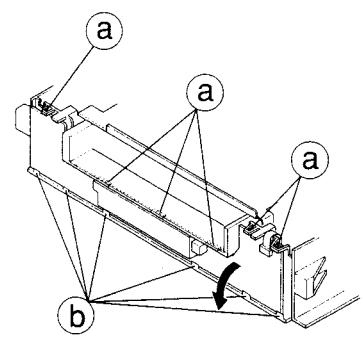


Fig.1-1-4 Front board assembly

1.1.5 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screws Ⓒ and a screw Ⓓ, then remove the bracket.
3. Take out a screw Ⓔ.
4. Disengage 2 tabs ⓐ as shown in Fig.1-1-6 and remove the SWITCHING REGULATOR board assembly.

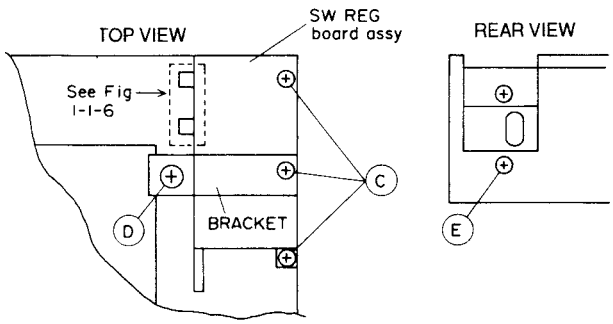


Fig.1-1-5 SWITCHING REGULATOR board assembly-(1)

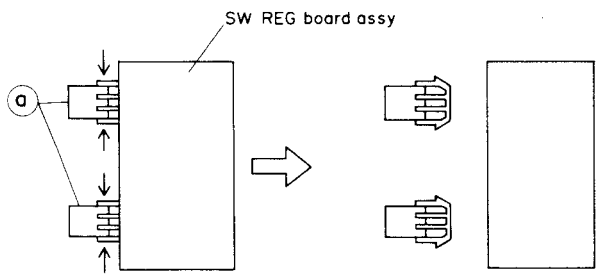


Fig.1-1-6 SWITCHING REGULATOR board assembly-(2)

1.1.6 Cassette housing assembly

1. Remove the top cover and front panel.
2. Take out 4 screws Ⓕ and 2 screws Ⓖ.
3. Disengage 2 claws ⓐ from the holder.
4. Remove the cassette housing assembly in direction of arrow.

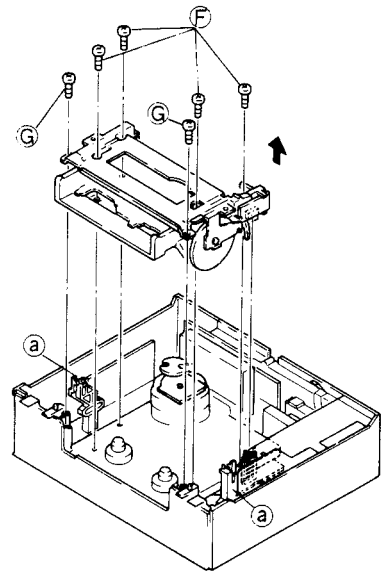


Fig.1-1-7 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓗ.
3. Disconnect connector CN502 from the PRE/REC board assembly
4. Remove the PRE/REC board assembly with the shield in the direction of arrow.

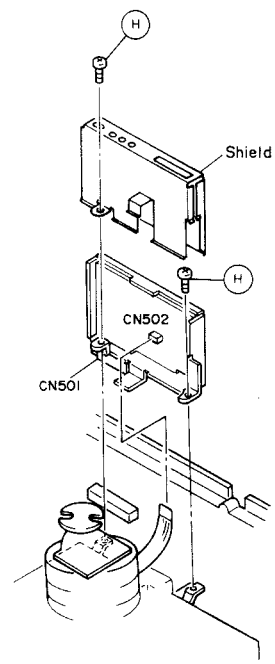


Fig.1-1-8 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Disconnect a connector of stator assembly.
3. Take out 3 screws (J) and washer then remove the head cleaner assy and the drum assembly.

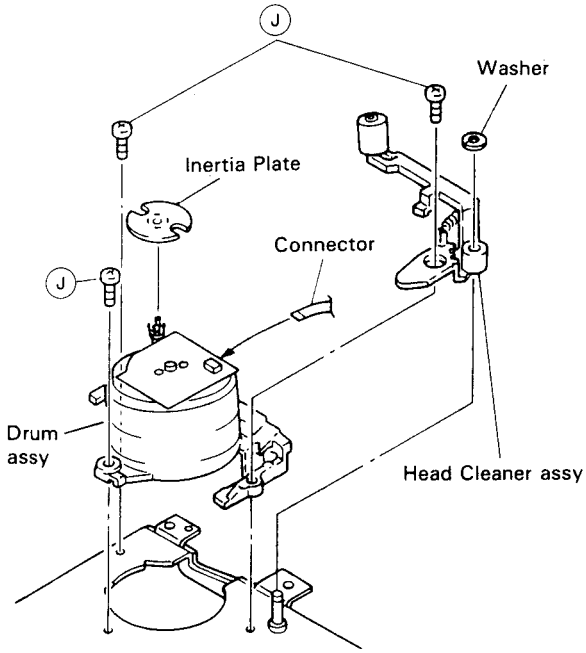


Fig.1-1-9 drum assembly

1.1.9 Main deck assembly

1. Remove the top cover, front panel, and cassette housing assembly.
2. Take out a screw (K) and disconnect 3 connectors (a) from the chassis.
3. Remove the main deck assembly in direction of arrow.

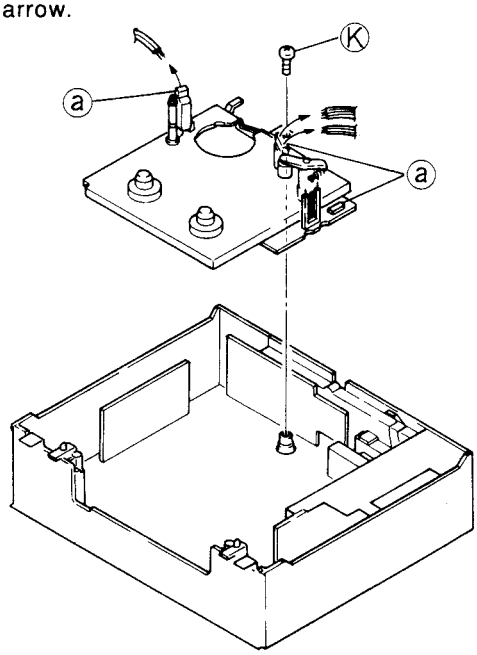


Fig.1-1-10 Main deck assembly

1.1.10 MAIN board assembly

1. Remove the top cover, front panel, SWITCHING REGULATOR, board assy cassette housing assy and main deck assy.
2. Take out 1 screw (L), holder (b) and disengage 2 claws (a) from the chassis.
3. Remove the MAIN board assembly in direction of arrow.

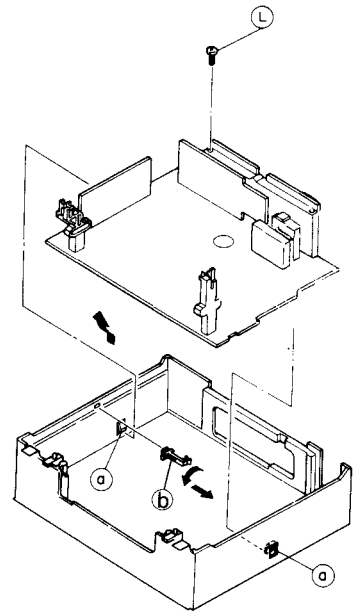


Fig.1-1-11 MAIN board assembly

1.1.11 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure)when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

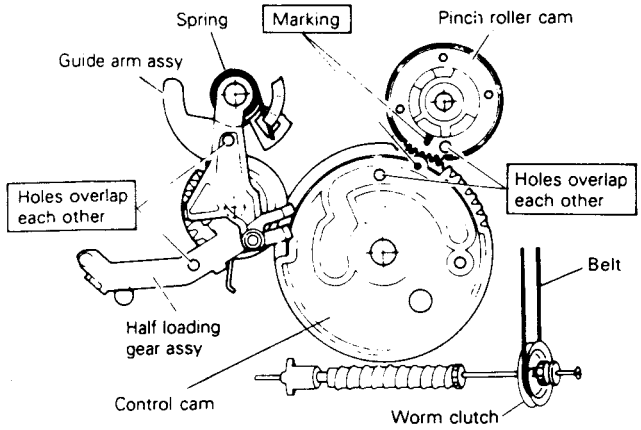
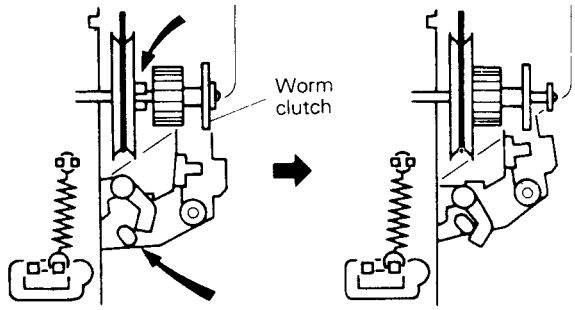


Fig. 1-1-12 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.



Flg.1-1-13(a) Not locked Fig.1-1-13(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-12 and re-engage the tabs. Supply power and use spare cassette to check for normal loading and eject operations.

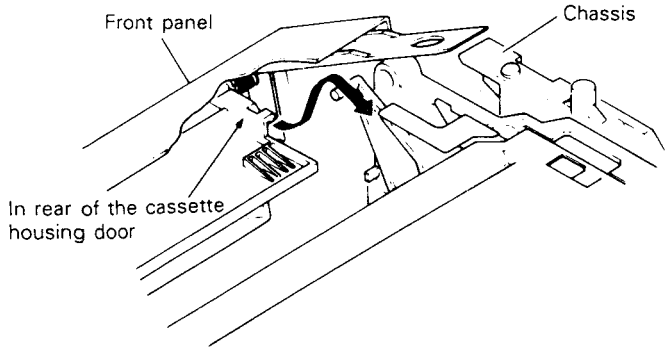


Fig.1-1-14 Cassette housing door

1.2 SERVICE POSITION -1

1. Remove the top cover, front panel and FRONT board assembly.
2. Take out 4 screws Ⓐ and a screw Ⓑ then remove the bracket.
3. Take out 2 screws Ⓒ , a screw Ⓓ , a screw Ⓔ and holder ⓑ .
4. Disengage 2 claws ⓐ from the chassis.
5. Remove the mechanism assembly(including cassette housing),MAIN board assembly and SWITCHING REGULATOR board assembly out of the chassis as shown in Fig.1-2-2.
6. Turn over the mechanism assembly and MAIN board assembly.
7. Connect the flat wire(CN1) of the FRONT board assembly to the MAIN board assembly.
8. Carry out checks & repairs as necessary as shown in.Fig.1-2-3.

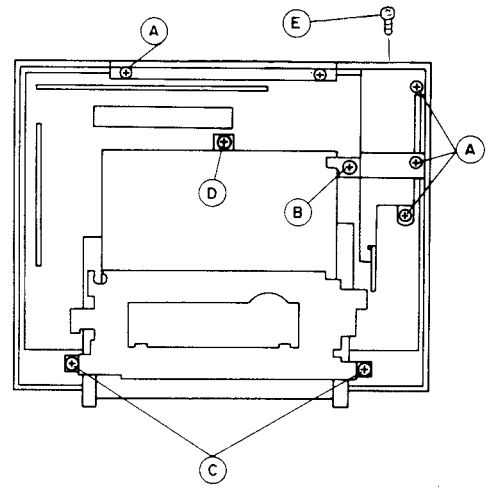


Fig.1-2-1

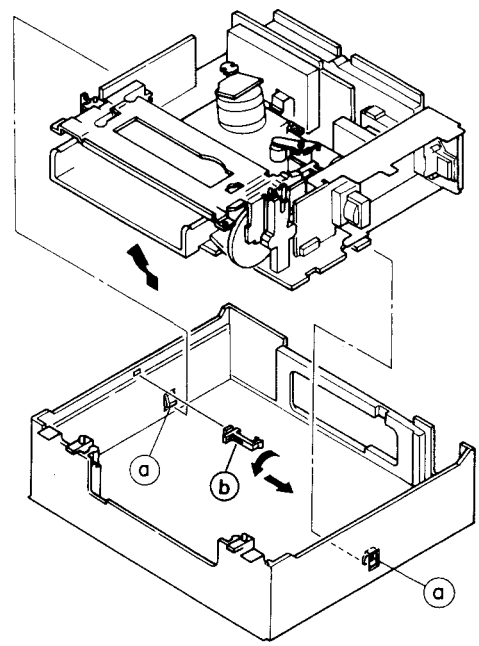
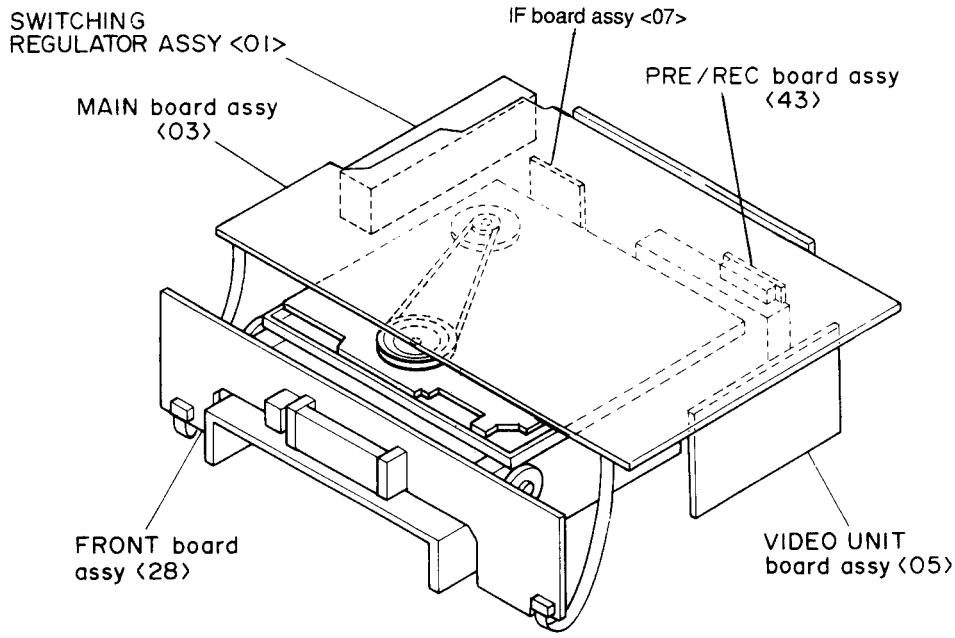


Fig1-2-2



1.3 SERVICE POSITION -2

1.3.1 Connections for MAIN board and SWITCHING REGULATOR board assembly

1. After removing the SWITCHING REGULATOR board assembly from the chassis,connect the patch cord for check and repair as follows.

NO.	CONNECTION				DISCRIPTION	CABLE PART NO.
①	SW.REG board	CN1	←→	MAIN board CN801	Pin 11	PEMCJ0978-111

Table 1-3-1 Patch cord list

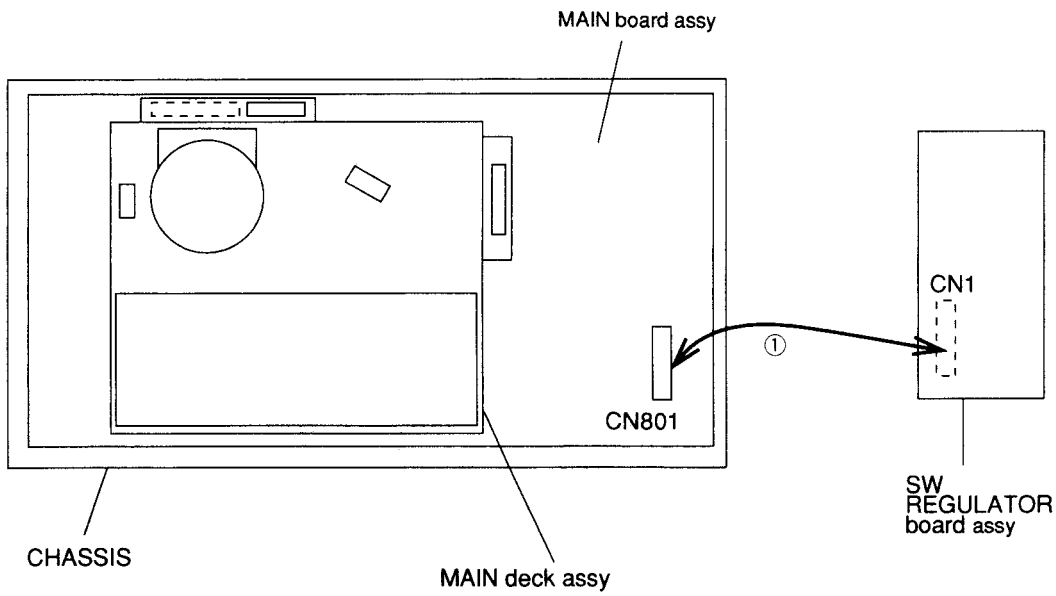


Fig. 1-3-1 Connections for patch cord

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 16 and 17 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

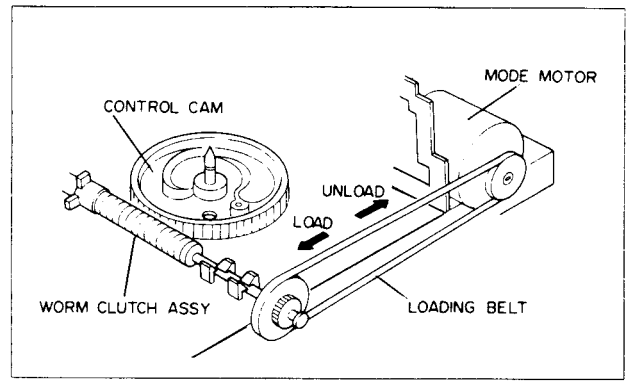


Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

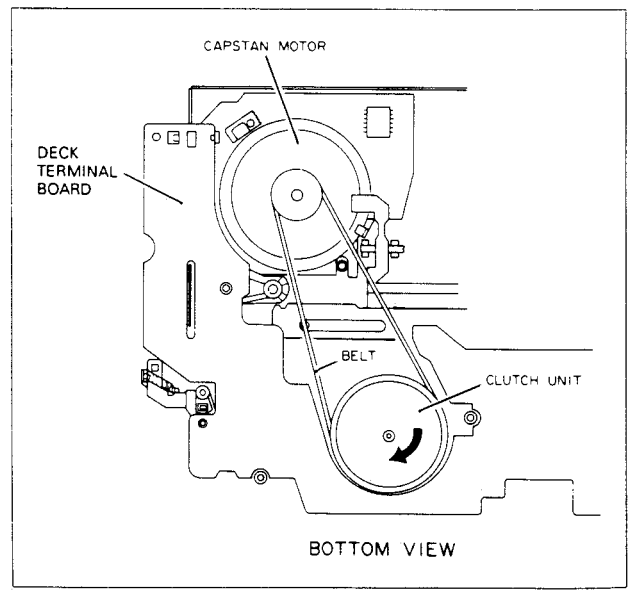


Fig. 2-1-2

4) Turn the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: ***Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.***

2.1.4 Test equipment

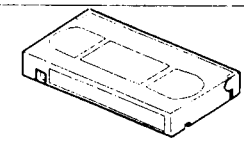
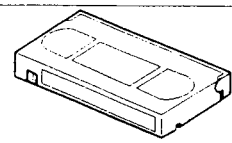
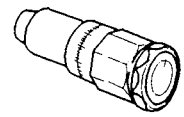
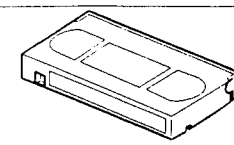
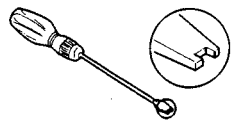
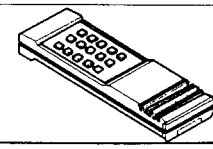
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	**Roller driver PTU94002**	**Presetting unit PTU94008**	
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

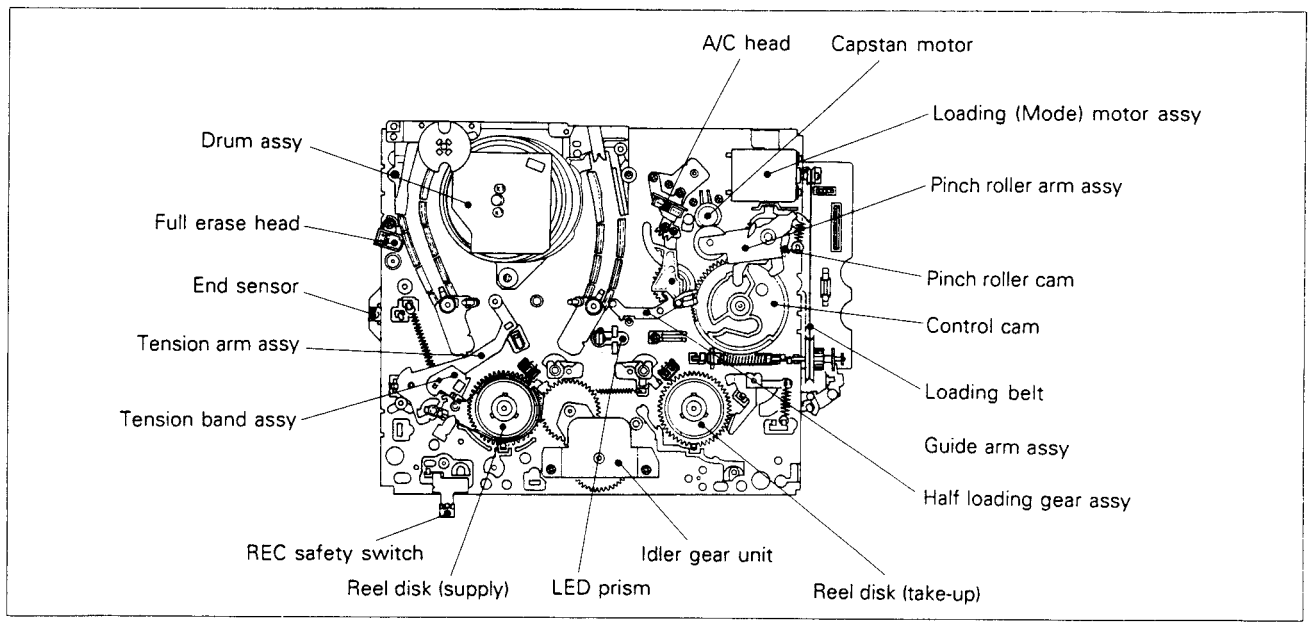


Fig. 2-2-1 Top view of main-deck

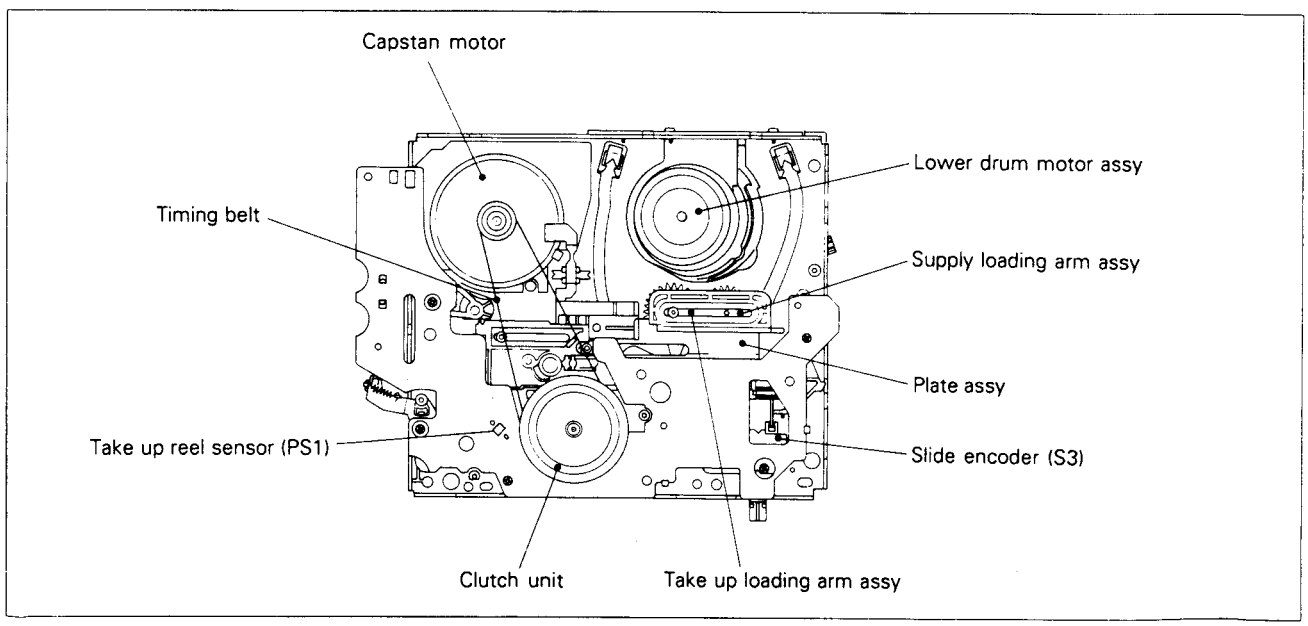


Fig. 2-2-2 Bottom view of main-deck

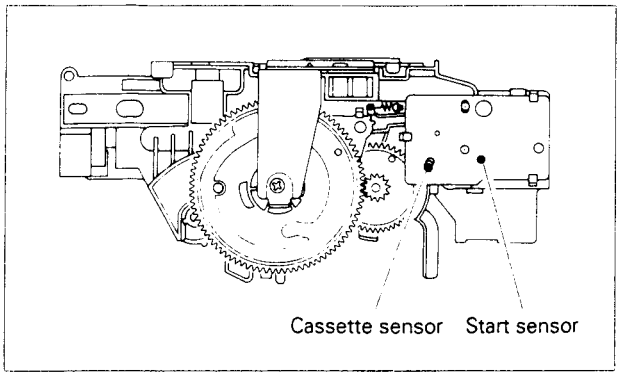


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: ***Stir grease that has been stored for an extended period.***

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	○	★	○	○
	A/C head	★			○			○
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							○
	Loading belt			○				○
	Mode motor assy			○				○
	Reel disk (Supply)			○				○
	Reel disk (Take-up)			○				○
	Clutch assy			○				○
	Worm clutch assy							○
	Plate assy							○
Others	Brush assy			○				○
	Tension band assy			○				○

★ : Cleaning
○ : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 2 screws (A).
2) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
3) Remove the flat cable.
4) To reinstall, first secure the flat cable, then insert 2 screws (A).
5) After reinstalling, be sure to perform switching point adjustment.

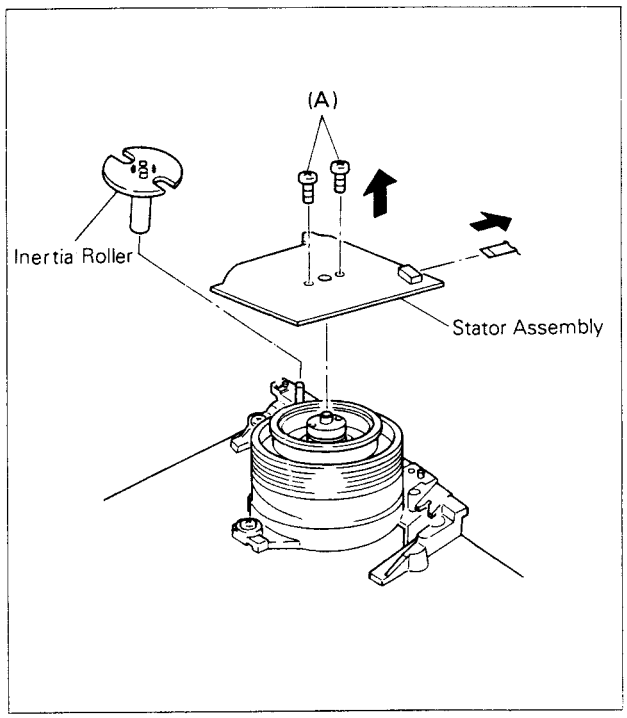


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

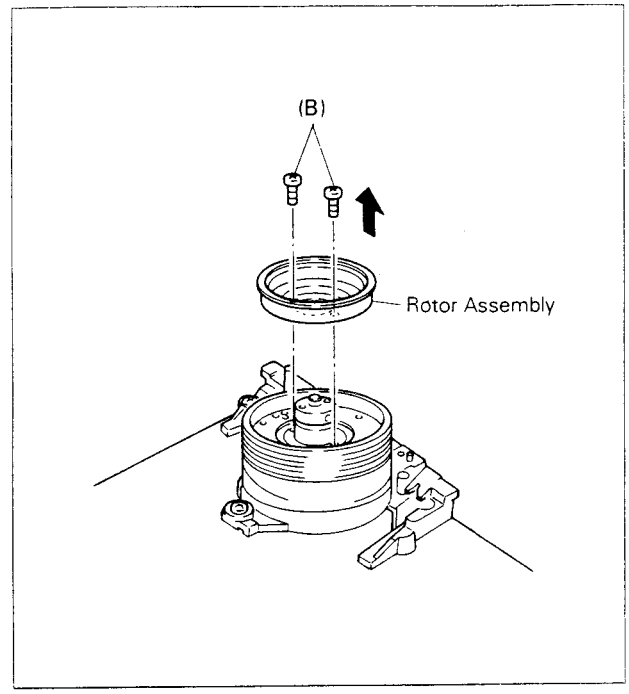


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.
4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-3).

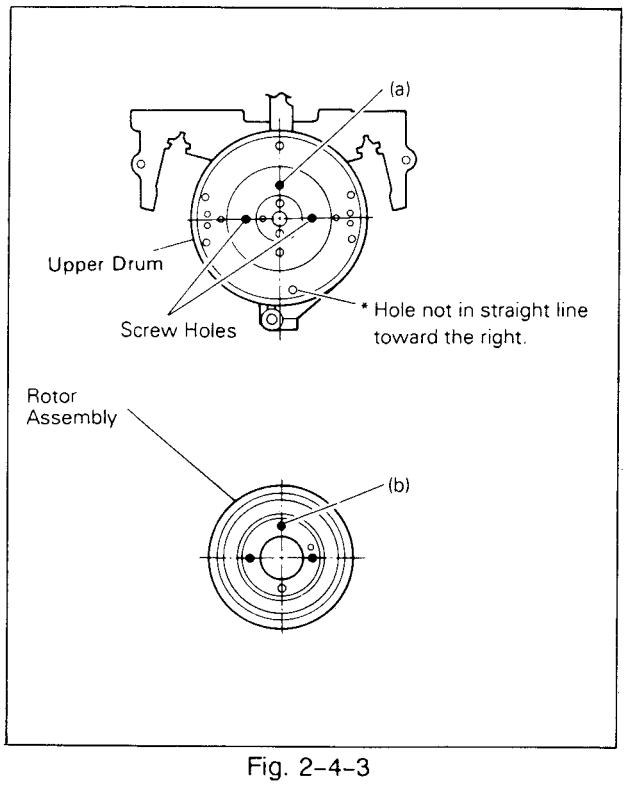


Fig. 2-4-3

2.4.3 Drum subassembly

1) Remove the Washer and Head cleaner Assembly.
2) Disengage the PRE/REC AMP board connector and flat cable.
3) Take out 3 screws (C) and remove the drum Subassembly.

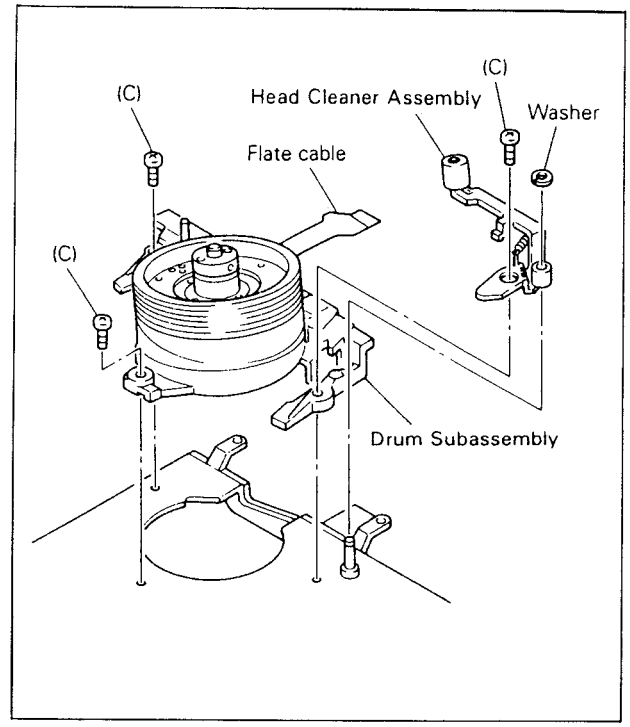


Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.
2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.
3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: ***If the Brush is replaced, do not apply the grease to the contacts.***

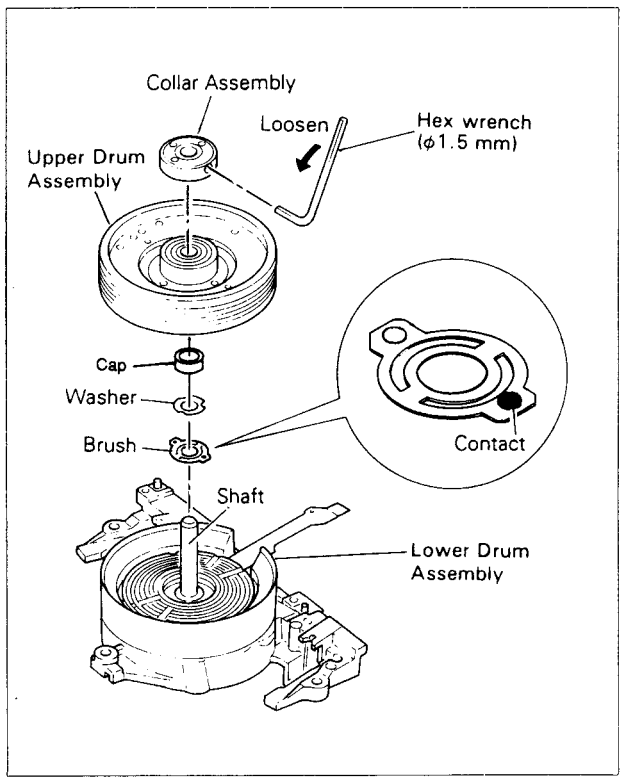


Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.
2) Set a new Washer on the Drum shaft (see Fig. 2-4-6).

Note: ***Be sure to use the new Washer supplied when replace the Upper Drum Assembly.***

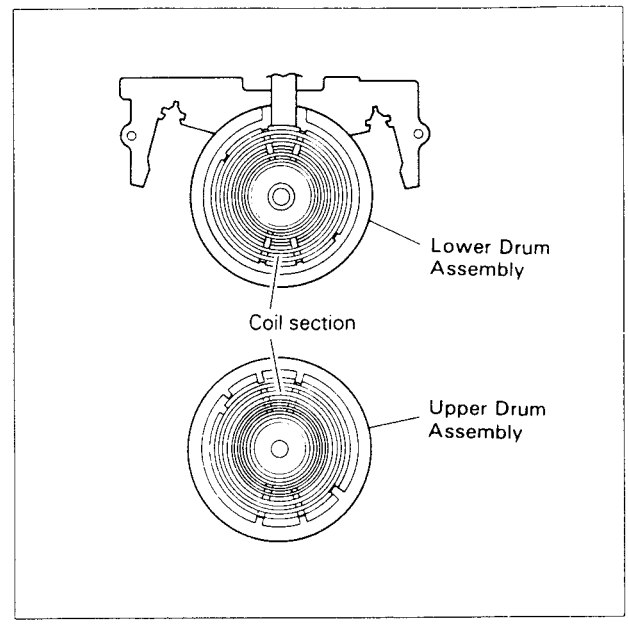


Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

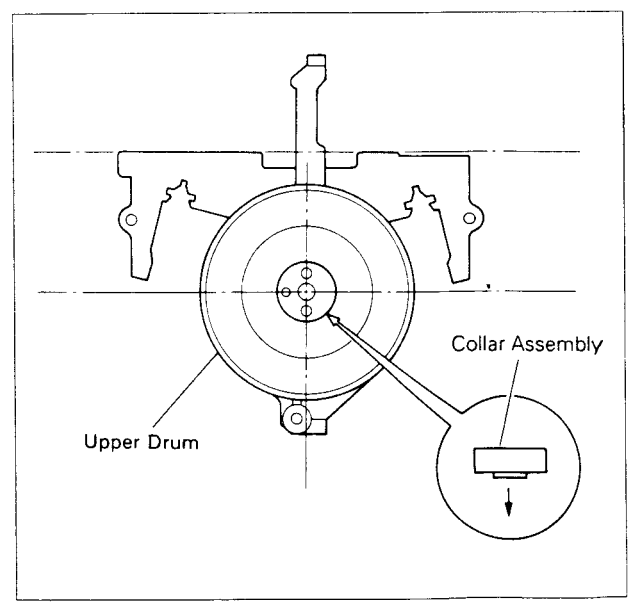


Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

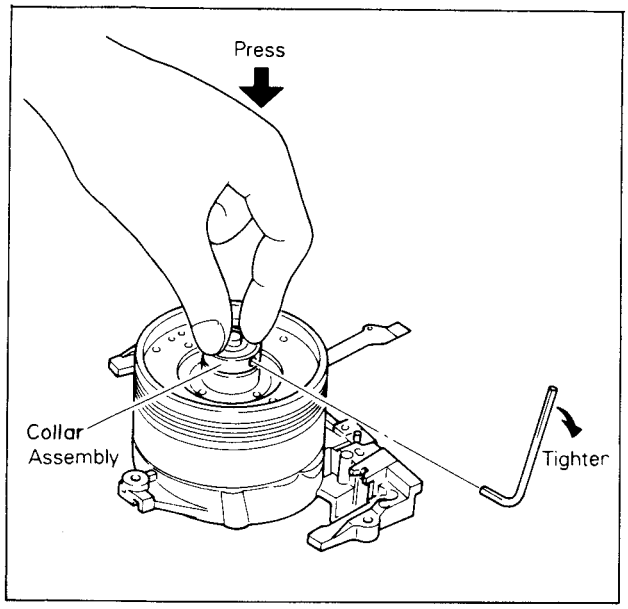


Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check LP mode)
- Recording color level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

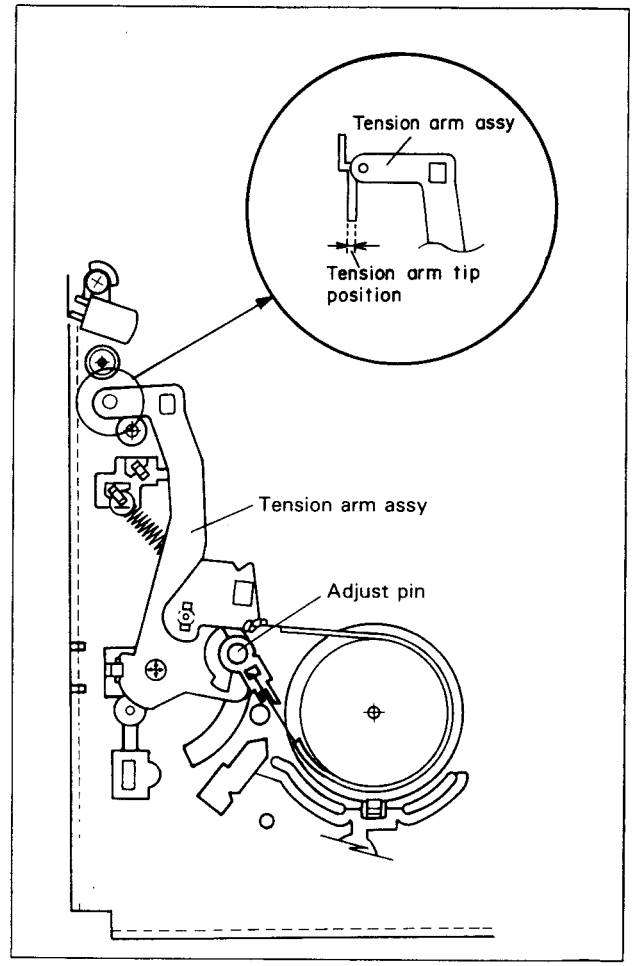


Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: *This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.*

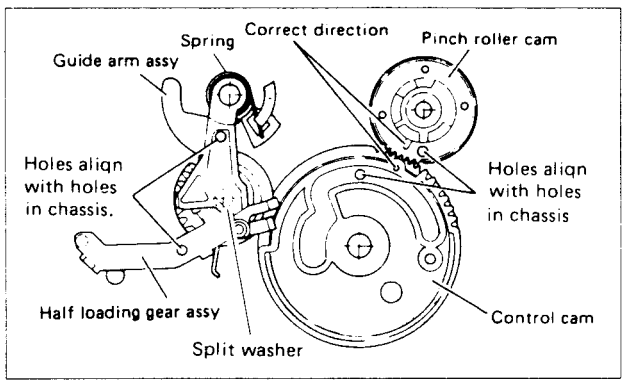


Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

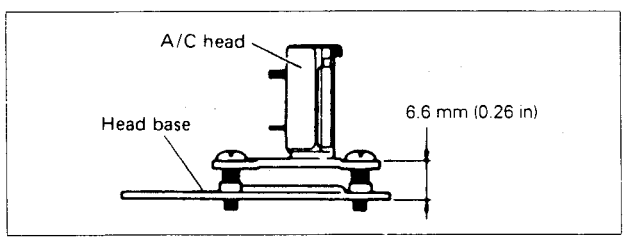


Fig. 2-4-11

Notes: • *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*

• *Perform interchangeability adjustments after electrical adjustments.*

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: *Observe that the brake assembly pin is engaged with the plate assembly groove.*

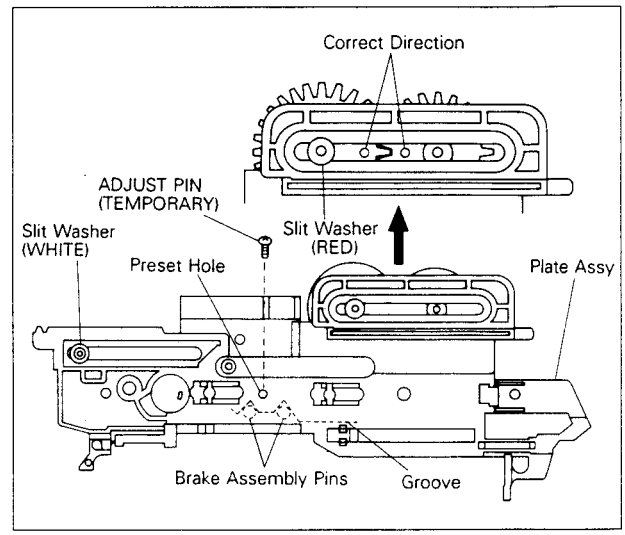


Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: *This adjustment is normally not needed. Perform after replacing the reel disk.*

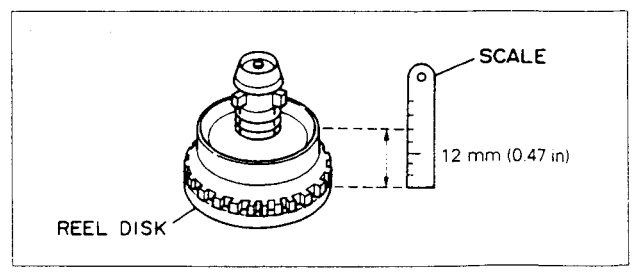


Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximised.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

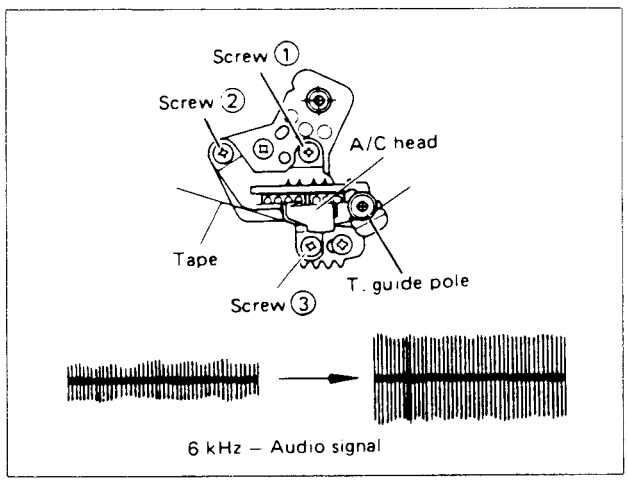


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the FM envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (–) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (–) button (count the number of pushes) until the maximum envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

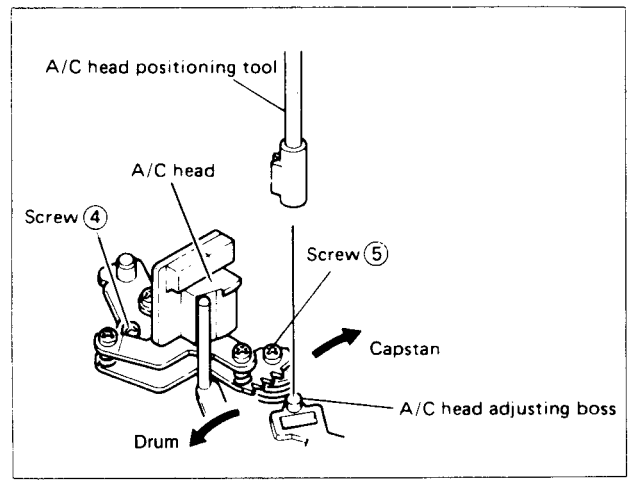


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

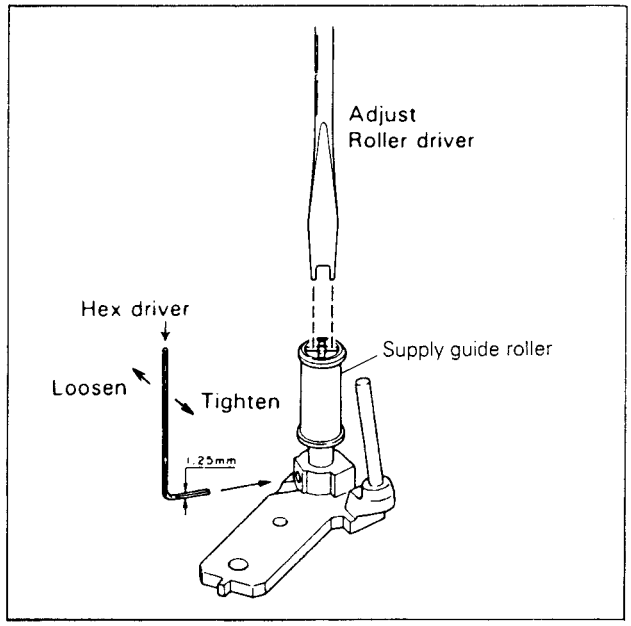


Fig. 2-5-3

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape, as in Fig. 2-5-6.
6) If the FM waveform varies and is not mostly flat, tweak the height of guide roller(s) until the FM waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (-) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.
9) Perform step 2.5.1 and 2.5.2.
10) Acceptable level difference between channel 1 and 2 is 5db. (See Fig. 2-5-8)

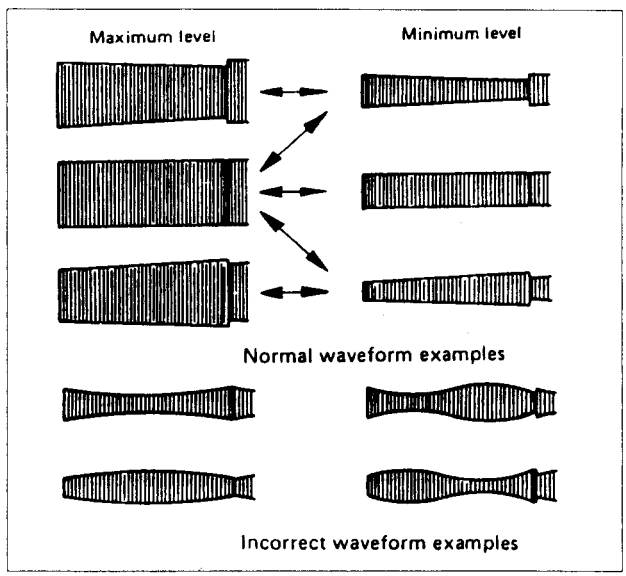


Fig. 2-5-4

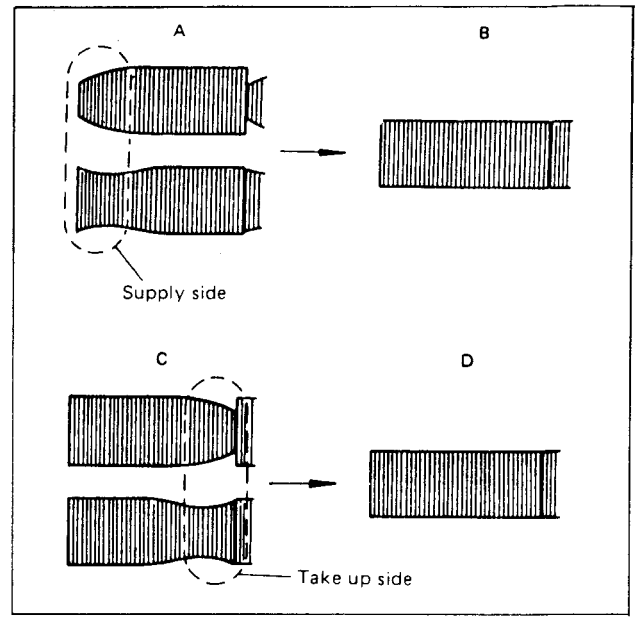


Fig. 2-5-5

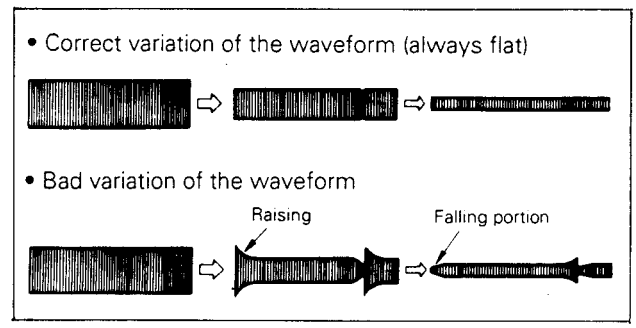


Fig. 2-5-6

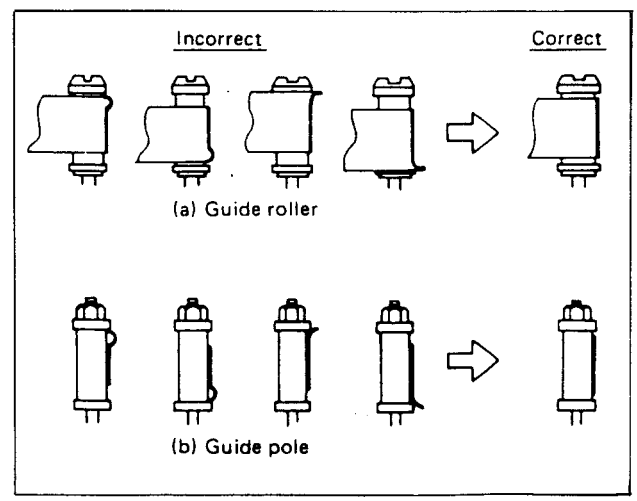


Fig. 2-5-7

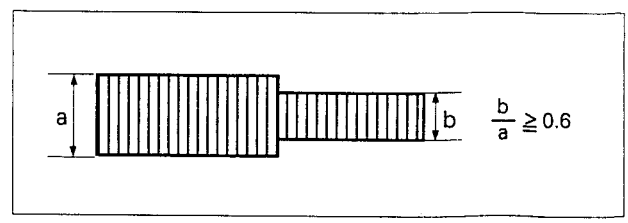


Fig. 2-5-8

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

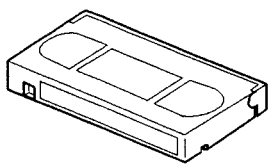
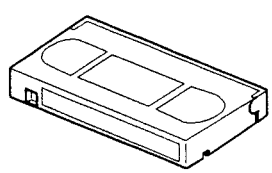
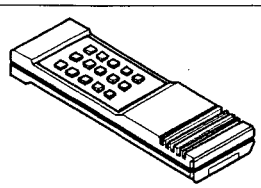
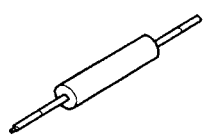
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor
2. Osciloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL/NTSC colour bar, stair-step
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-1 : NTSC	Alignment tape (SP) MH-2 : PAL
	
Presetting unit PTU94008	Adjustment driver YTU93004-2
	
*SMC replacement tools YTU94038C	

Note:** ***It is convenient for replacing chip parts.

Table 3-1-1 Required adjustment tools

3. Colour bar signal and pattern

- PAL colour bar signal waveform

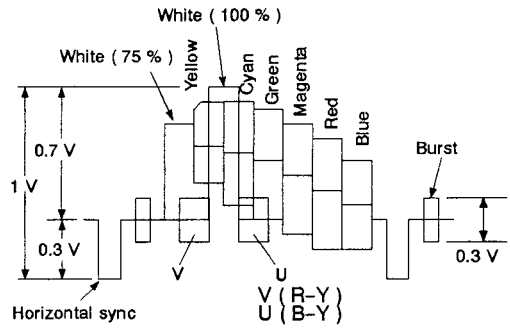


Fig. 3-1-1 PAL Colour bar signal waveform

- PAL colour bar pattern

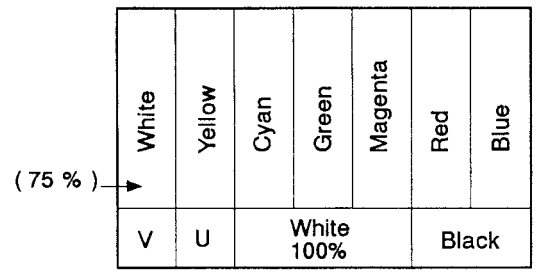


Fig. 3-1-2 PAL colour bar pattern

- NTSC colour bar signal waveform

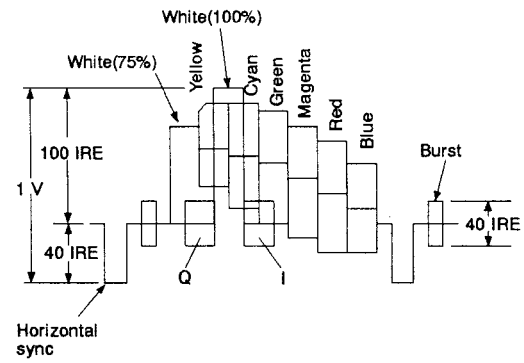


Fig. 3-1-3 NTSC Colour bar signal waveform

- NTSC colour bar pattern

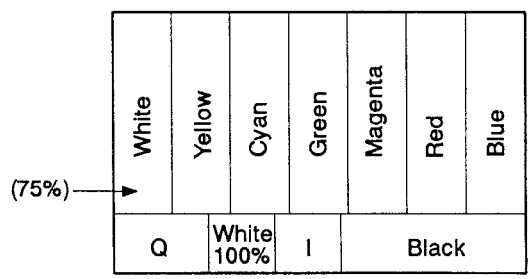


Fig. 3-1-4 NTSC colour bar pattern

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•TP802 (SWD 5V) •TP801 (GND)
Adjustment tool	•R805 (SWD 5V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to TP802 (SWD 5V) and TP801 (GND).
2) Adjut R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point (PAL)

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB (PAL) •Automatic tracking OFF
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Trigger slope (–)	•TP411 (DRUM FF)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to VIDEO OUT TERMINAL and external trigger from TP411 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (–) buttons.
4) Adjust by pressing "E" or "F" buttons of presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

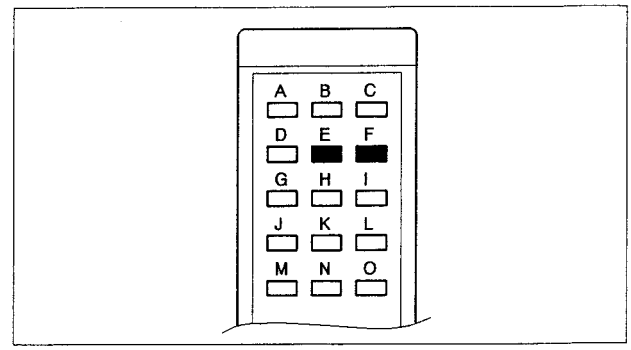


Fig. 3-1-5 Presetting unit (PAL)

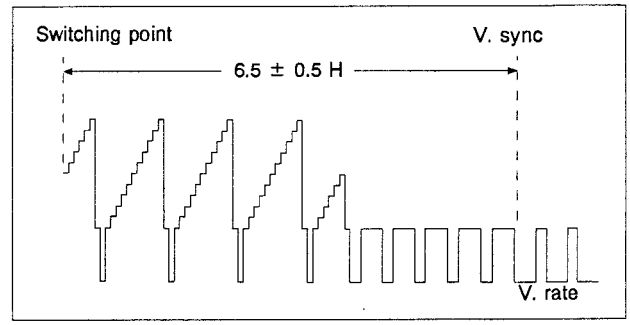


Fig. 3-1-6 PB switching point (PAL)

2. PB switching point (NTSC)

Signal	•Alignment tape (MH-1) •Stairstep
Mode	•PB (NTSC) •Automatic tracking OFF
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Trigger slope (–)	•TP411 (DRUM FF)
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to VIDEO OUT TERMINAL and external trigger from TP411 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (–) buttons.
4) Adjust by pressing "E" or "F" buttons of the presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

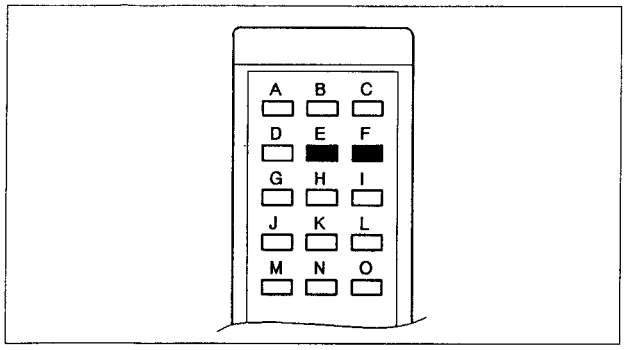


Fig. 3-1-7 Presetting unit (NTSC)

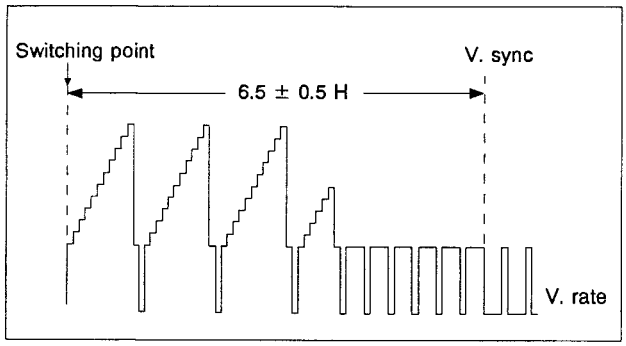


Fig. 3-1-8 PB switching point (NTSC)

3. Slow tracking preset

Signal	•PAL colour bar •NTSC colour bar
Mode	•SP (PAL/NTSC) •LP (PAL) •EP (NTSC) •REC → PB (SLOW) •Automatic tracking OFF •Colour system: AUTO
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

1) Record a PAL colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the TV PROG. (+) and (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "C" or "B" buttons of the presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.
7) Repeat steps 1) to 6) in LP mode.
8) Record a NTSC colour bar singnal, and repeat steps 2) to 6) in SP mode.
9) Record a NTSC colour bar signal, and repeat steps 2) to 6) in EP moed.

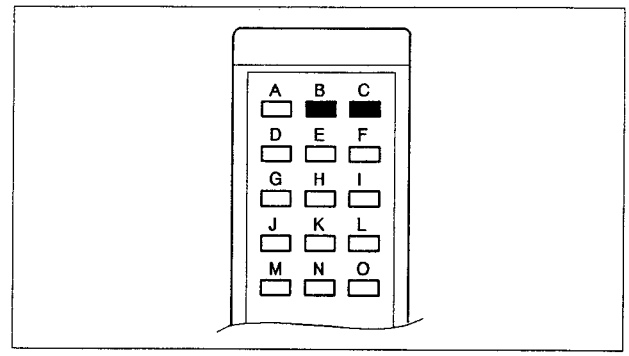


Fig. 3-1-9 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to VIDEO OUT TERMINAL.
2) Supply a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
4) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

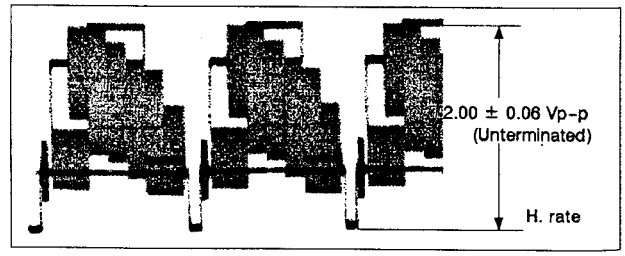


Fig. 3-1-10 EE Y level

2. White clip

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-11.

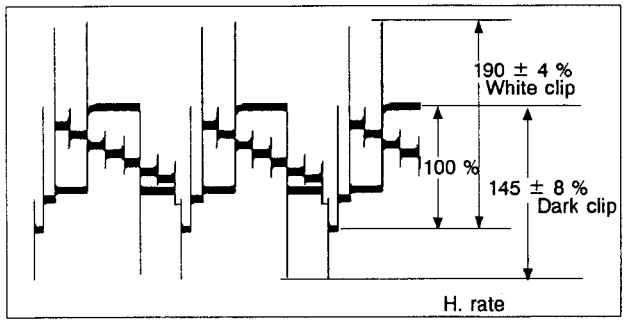


Fig. 3-1-11 White clip

3. Carrier & deviation

· Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE •Colour system: MANUAL PAL
Equipment	•Frequency counter
Measurement point	•CN2 pin 5
Adjustment part	•R28 (CARRIER)
Specification	•3.80 ± 0.04 MHz

1) Connect the frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 0.04 MHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 ± 0.04 MHz.

· Deviation

Signal	•PAL colour bar
Mode	•REC → PB •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R29 (DEVIATION)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a PAL colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

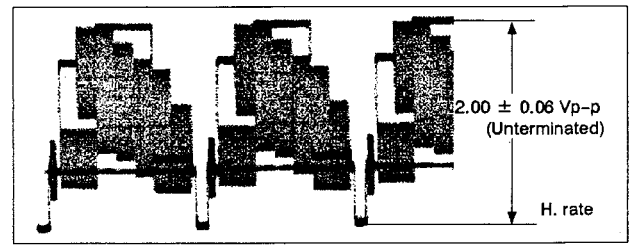


Fig. 3-1-12 Carrier & deviation

4. YNR level

Signal	•PAL colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•IC2 pin 9
Adjustment part	•R18 (N.C. BALANCE)
Specification	•Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable resistor NVP1301-152N and adjust it for minimum DC step difference, as in Fig. 3-1-13.

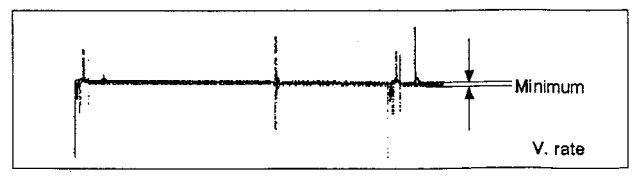


Fig. 3-1-13 YNR level

5. PB Y level

Signal	•PAL colour bar
Mode	•SP •REC → PB •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•VIDEO OUT TERMINAL
Adjustment part	•R25 (PB Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

Note: ***Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.***

1) Connect an oscilloscope to VIDEO OUT TERMINAL.
2) Record and playbck a PAL colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable resistor NVP1301-472N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-14.

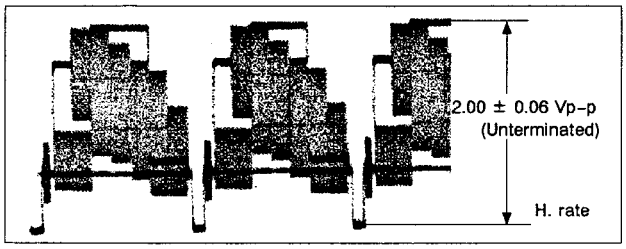


Fig. 3-1-14 PB Y level

6. REC colour level

Signal	•PAL colour bar
Mode	•SP •REC •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•CN2 pin 11 (REC COLOUR)
Adjustment part	•R52 (REC COLOUR LEVEL)
Specification	•200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record a PAL colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mVp-p, as in Fig. 3-1-15.
4) If necessary, replace R52 with the variable resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

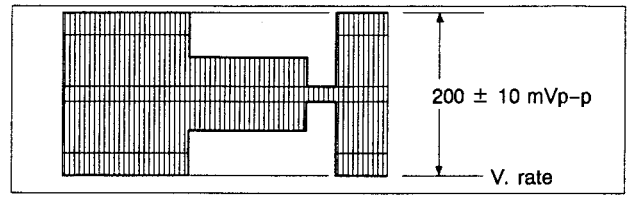


Fig. 3-1-15 REC colour level

7. MESECAM detect

Signal	•SECAM colour bar
Mode	•EE •Colour system: AUTO
Equipment	•Oscilloscope
Measurement point	•TP244 (MESECAM DETECT) 〔MAIN BOARD〕
Adjustment part	•L202 (MESECAM DETECT) 〔MAIN BOARD〕
Specification	•A : B = 3 : 4

1) Connect an oscilloscope to TP244.
2) Adjust L202 so that A and B are related as follows; A : B = 3 : 4.

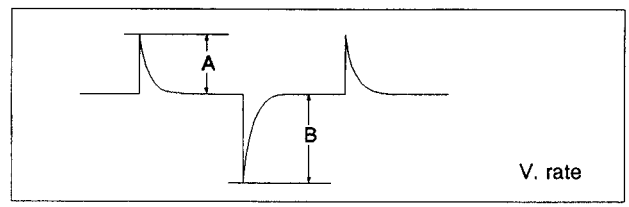


Fig. 3-1-16 MESECAM detect

3.1.5 TIMER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	•No signal
Mode	•EE •AUX
Equipment	•Frequency counter
Measurement point	•IC601 pin 64
Adjustment part	•C614 (TIMER CLOCK)
Specification	•1024.008 ± 0.001 Hz (976.5597 ± 0.0010 μsec)

1) Connect the frequency counter to IC601 pin 64 and GND.
2) Connect the short wire between IC601 pin 33 and IC601 pin 63.
3) Short the leads of capacitor C616 once in order to reset IC601.
4) Disconnect the short wire then connect it quickly again.
5) Adjust C614 for 1024.008 ± 0.001 Hz (976.5579 ± 0.0010 μsec).
6) Disconnect the short wire.

3.1.6 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF BOARD.*

Equipment required

1. IF sweep signal generator (with suitable markers, PIF, SIF, etc.)
2. Sweep signal supply cable (See Fig. 3-1-17)

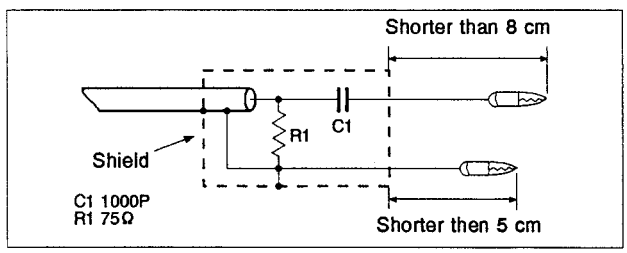


Fig. 3-1-17 Sweeper probe

1. VCO

〈Factory Method〉

Signal	•Sweep generator output
Mode	•Tuner (without antenna input Signal)
Equipment	•Oscilloscope •IF sweep signal generator
Sweeper probe	•Sweep signal supply cable
Measurement point	•IC1 pin 17
Adjustment part	•T3 (VCO)
Specification	•38.0 MHz (no distorton)

1) Use a sweeper probe as shown in Fig. 3-1-17 and connect the sweep generator output to IC1 pin 6.
2) Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope.
3) Connect an oscilloscope to IC1 pin 17 (VIDEO DET OUT) and adjust T3 to align the waveform with the frequency marker as shown in Fig. 3-1-18.

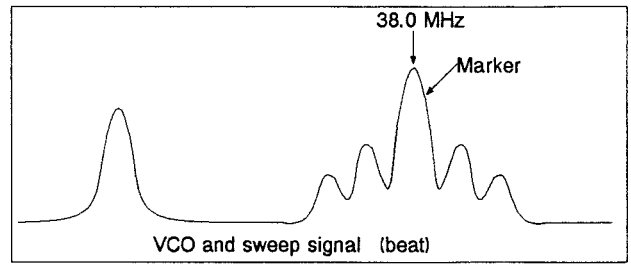


Fig. 3-1-18 VCO

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Monitor-TV
Other condition	•Same as Factory Method
Specification	•Fine picture

1) Receive a colour broadcasting.
2) Adjust T3 to obtain a fine picture on the monitor.

Note: *Before the following adjustments;*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

2. RF AGC

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope •TV signal generator
Measurement point	•IF terminal of front end
Adjustment part	•R30 (RF AGC)
Specification	• -6 ± 0.5 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V Tuner (front end) .
2) Adjust R30 for maximum level, then adjust R30 to reduce the -6.0 dB from maximum level.

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•TV-monitor
Other condition	•Same as Factory Method
Specification	•Noise just disappears

Note: *Adjust R30 (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust R30 to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

3. SOUND DET.

〈Factory Method〉

Signal	•TV broadcasting
Mode	•Tuner •AFC NORM by MENU
Equipment	•Distortion meter
Measurement point	•JP2 pin 7
Adjustment part	•T1 (FM DET)
Specification	•Minimum distortion

1) Use a adjustment circuit as shown in Fig.3-1-19 and with AFC mode to NORM.
2) Connect the distortion meter to pin 7 of JP2 and observe audio signal.
3) Adjust T1 so that the distortion becomes minimum (less than 1.5 %).

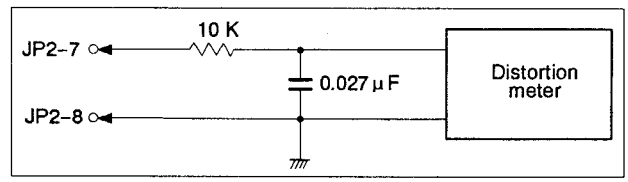


Fig. 3-1-19 Adjustment circuit

《Alternate Method》

Signal	•TV broadcasting
Mode	•Tuner
Equipment	•Oscilloscope
Other condition	•Same as Factory Method
Specification	•Maximum level

1) Receive a colour broadcasting, and connect an oscilloscope to pin 7 of JP2.
2) Adjust T1 for maximum level at audio sound.

4. AFC

Signal	•TV broadcast
Mode	•Tuner
Equipment	•Oscilloscope
Measurement point	•JP2 pin 3
Adjustment part	•T2 (AFC)
Specification	•5.0 ± 0.1 V DC

1) Receive a colour broadcasting.
2) Connect an oscilloscope to pin 3 of JP2.
3) Set the oscilloscope to DC mode and adjust T2 to set the lower edge of the ripple waveform to 5.0 V DC.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions

The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

1. Schematic diagram values

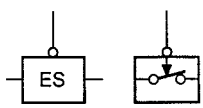
Unless otherwise specified.

1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

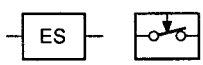
2. Indications

AUX : Active only at high.

$\overline{AUX}$: Active only at low.



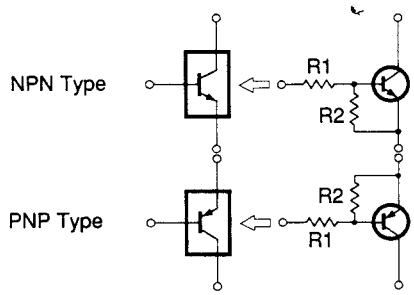
Active only at low for electronic switch.



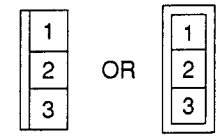
Active only at high for electronic switch.

Digital transistor :

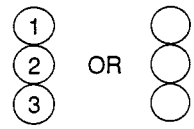
The digital transistor includes built in resistors.
It features small size and high reliability.



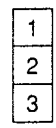
3. Interpreting Connector indications



Removable connector



Direct connection on board

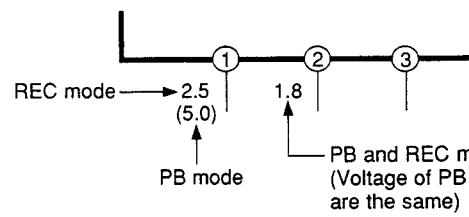


Non-removable Board connector

Connected pattern on board

4. Voltage measurement

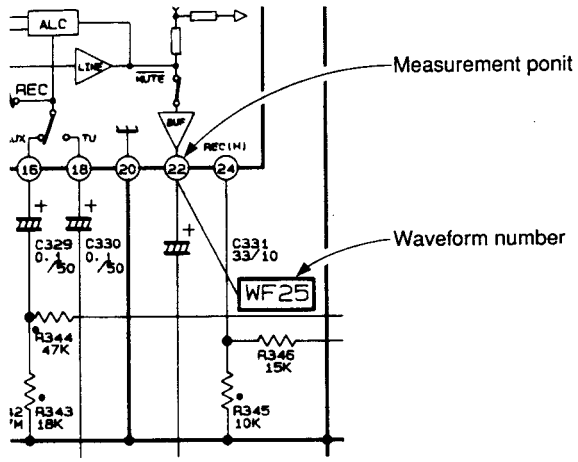
1) Video circuits
   REC: Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio circuits
   REC: 1KHz, –8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Voltage Indications for REC and PB modes on the schematic diagram are as shown below.



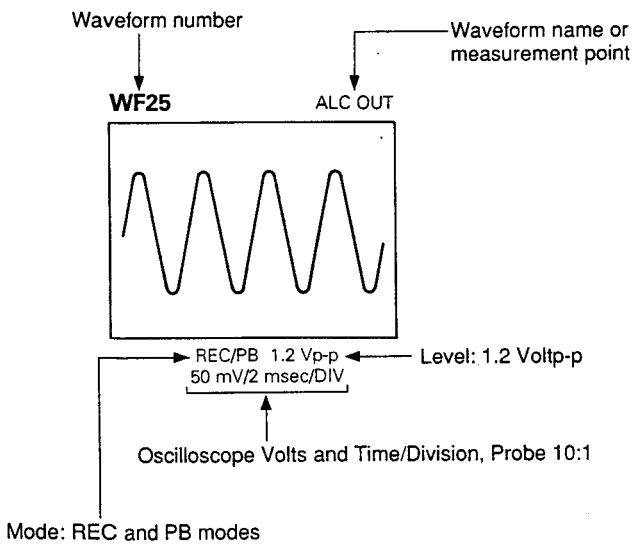
Note: If do not indicate for voltage measurement on the schematic diagram, refer to the voltage charts.

5. Waveform measurement

1) Video circuits
   REC: Colour bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, colour bar SP mode, normal VHS mode.
2) Audio circuits
   REC: 1KHz, –8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera circuits
   Measured using a correctly illuminated grey scale or colour bar test charts in the E-E mode.
4) Indication on schematic diagram
   Waveform indications on the schematic diagram are as shown below.



5) Waveform indications



6. Signal path Symbols

The arrows indicate the signal path as follows.

- Playback signal path
- Playback and recording signal path
- Recording signal path (including E-E signal path)
- Y signal path
- Colour (Chroma) signal path
- R or R-Y signal path
- B or B-Y signal path
- Capstan servo path
- Drum servo path
- Reel servo path

CIRCUIT BOARD NOTES

1. Colour indications

1) Foil side :
   Foil side patterns are indicated at GREY shading.
2) Component side :
   Component side patterns are indicated at RED shading.

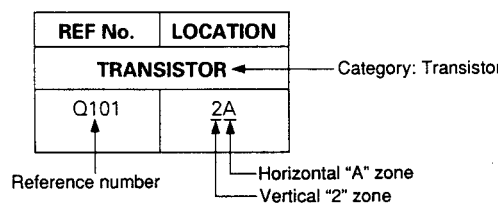
2. Foil and Component sides

1) Foil side (B side) :
   Parts on the foil side seen from foil face (pattern face) are indicated.
2) Component side (A side) :
   Parts on the component side seen from component face (parts face) are indicated.

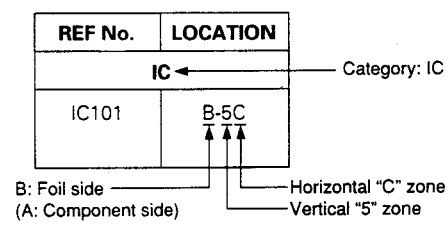
3. Parts location guides

Parts location are indicated by guide scale on the circuit board.

1) Signal pattern :



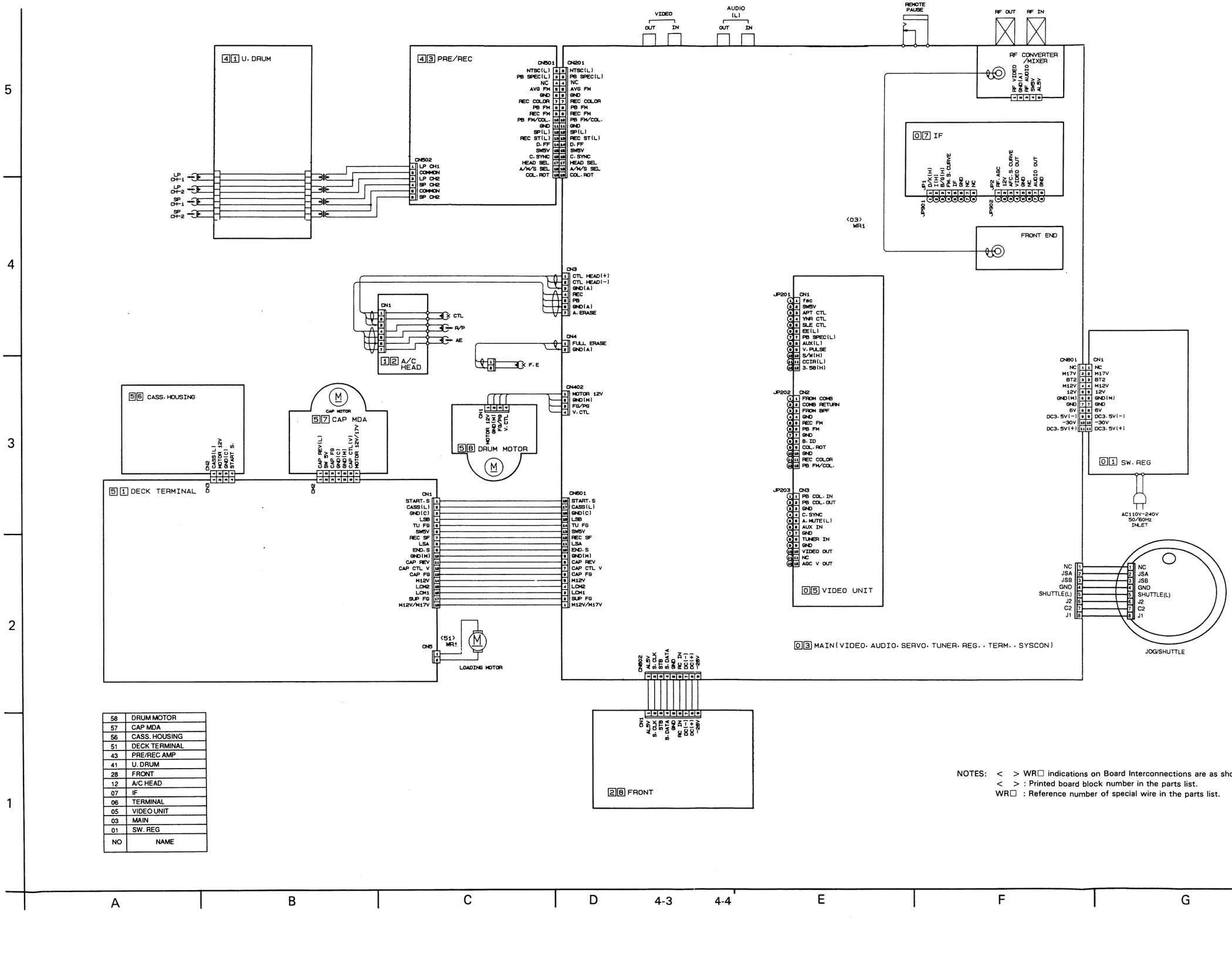
2) Double pattern :



Notes:

1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

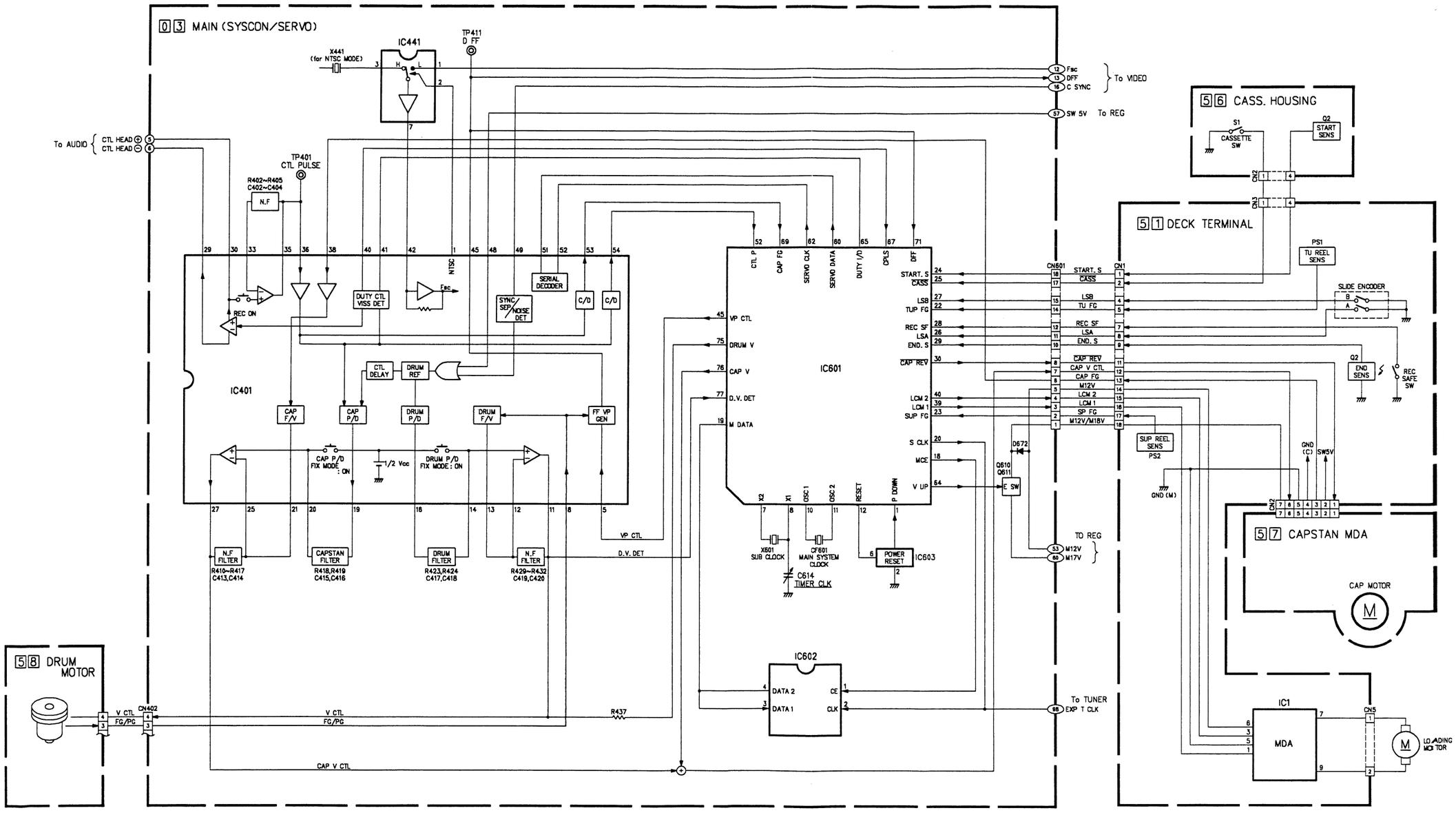
4.1 BOARD INTERCONNECTIONS



NO	NAME
58	DRUM MOTOR
57	CAP MDA
56	CASS. HOUSING
51	DECK TERMINAL
43	PRE/REC AMP
41	U. DRUM
28	FRONT
12	A/C HEAD
07	IF
06	TERMINAL
05	VIDEO UNIT
03	MAIN
01	SW. REG

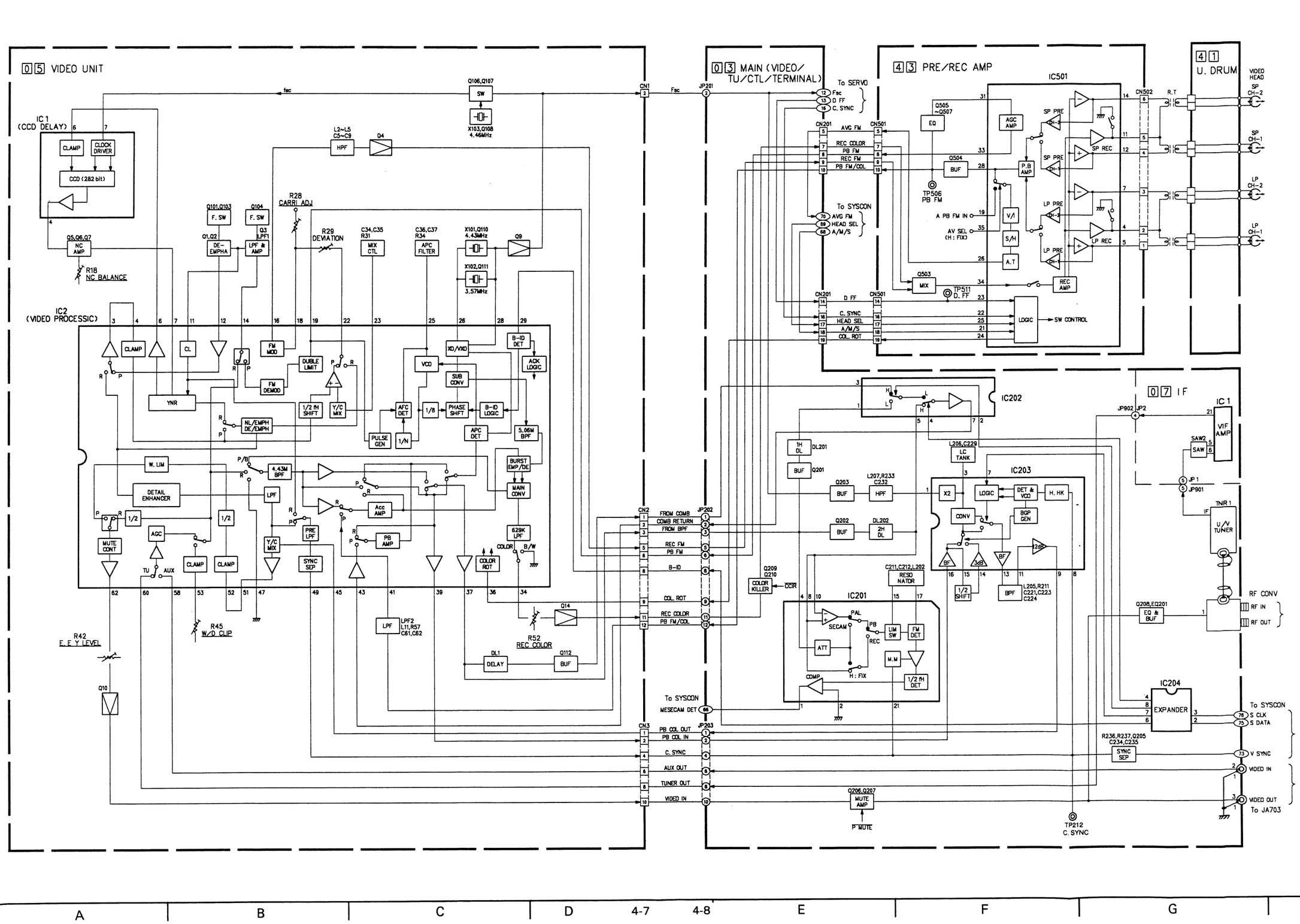
NOTES: < > WR□ indications on Board Interconnections are as shown below.
< > : Printed board block number in the parts list.
WR□ : Reference number of special wire in the parts list.

4.2 SYSCON/SERVO BLOCK DIAGRAM

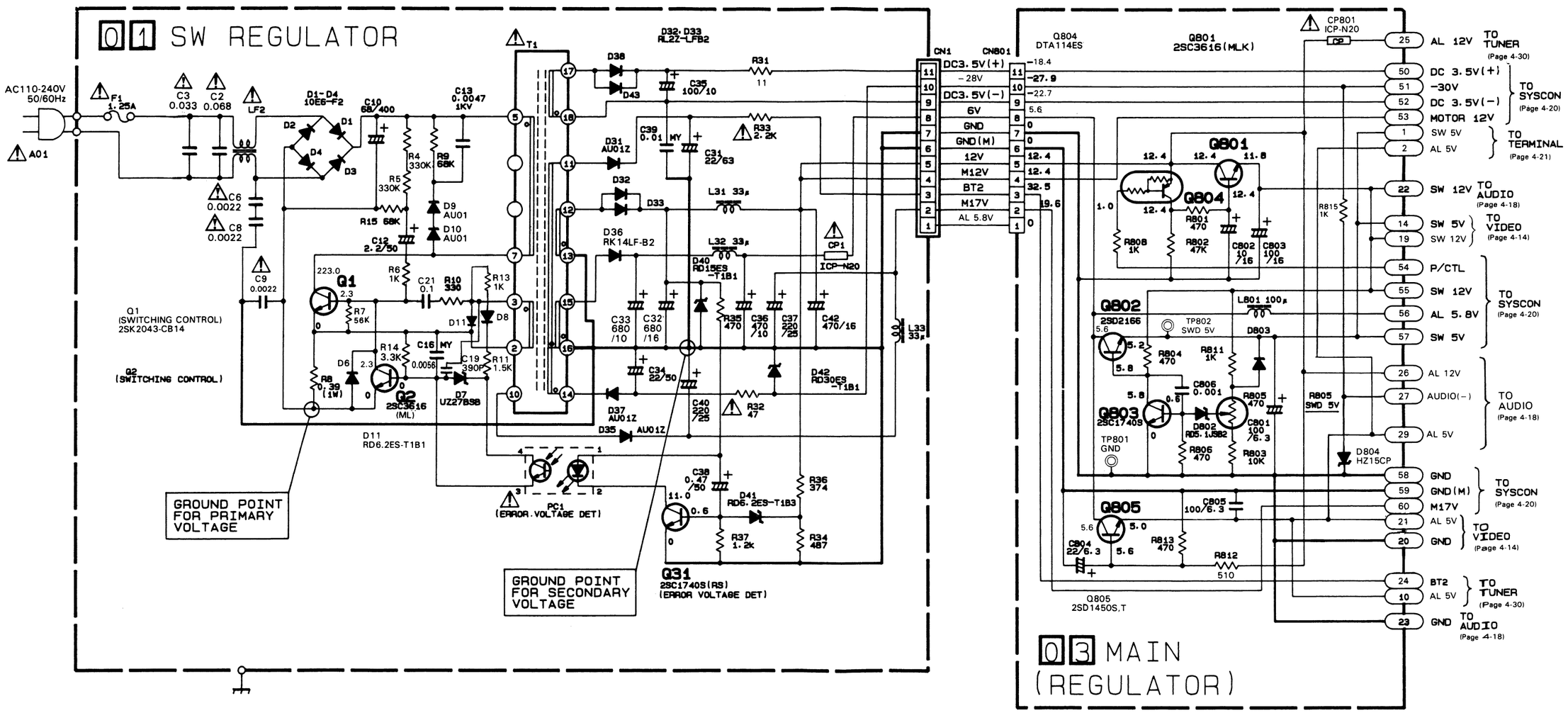


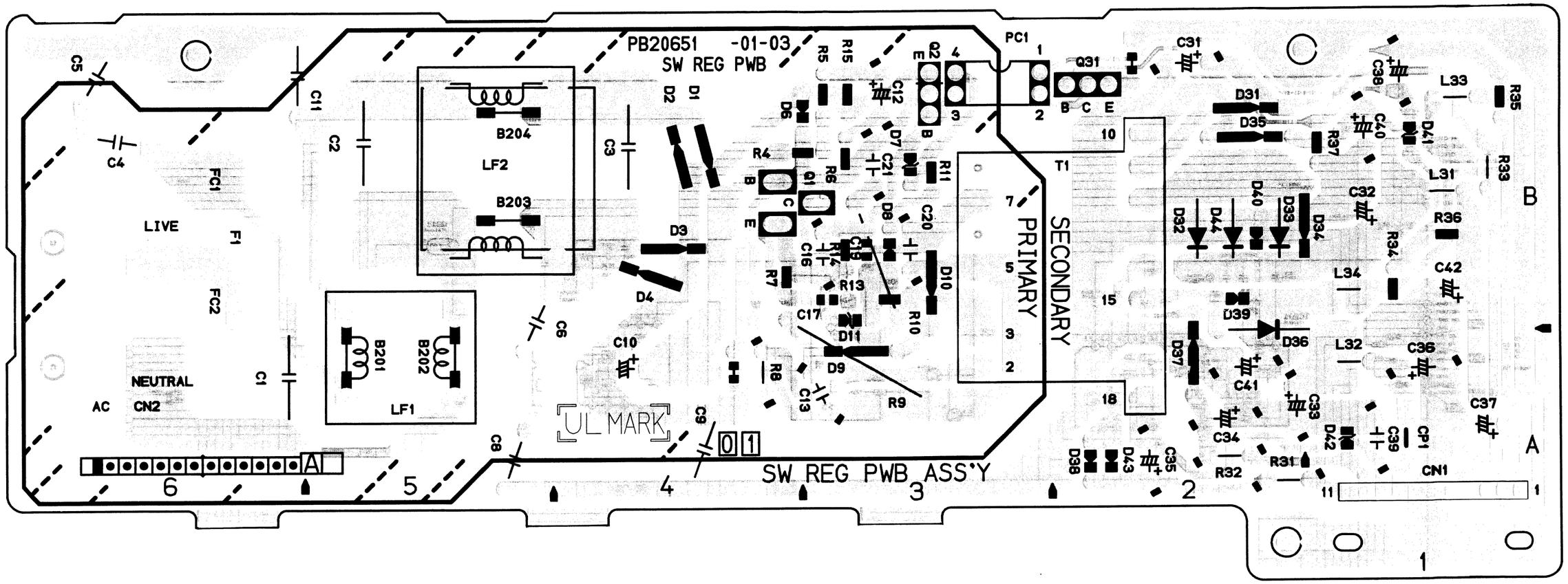
A B C D 4-5 4-6 E F G H

4.3 VIDEO BLOCK DIAGRAM



4.4 SWITCHING REGULATOR SCHEMATIC DIAGRAM





MAIN CONPONENT PARTS LOCATION GUIDE

<SW REG PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	3B
Q2	3B
Q31	2B

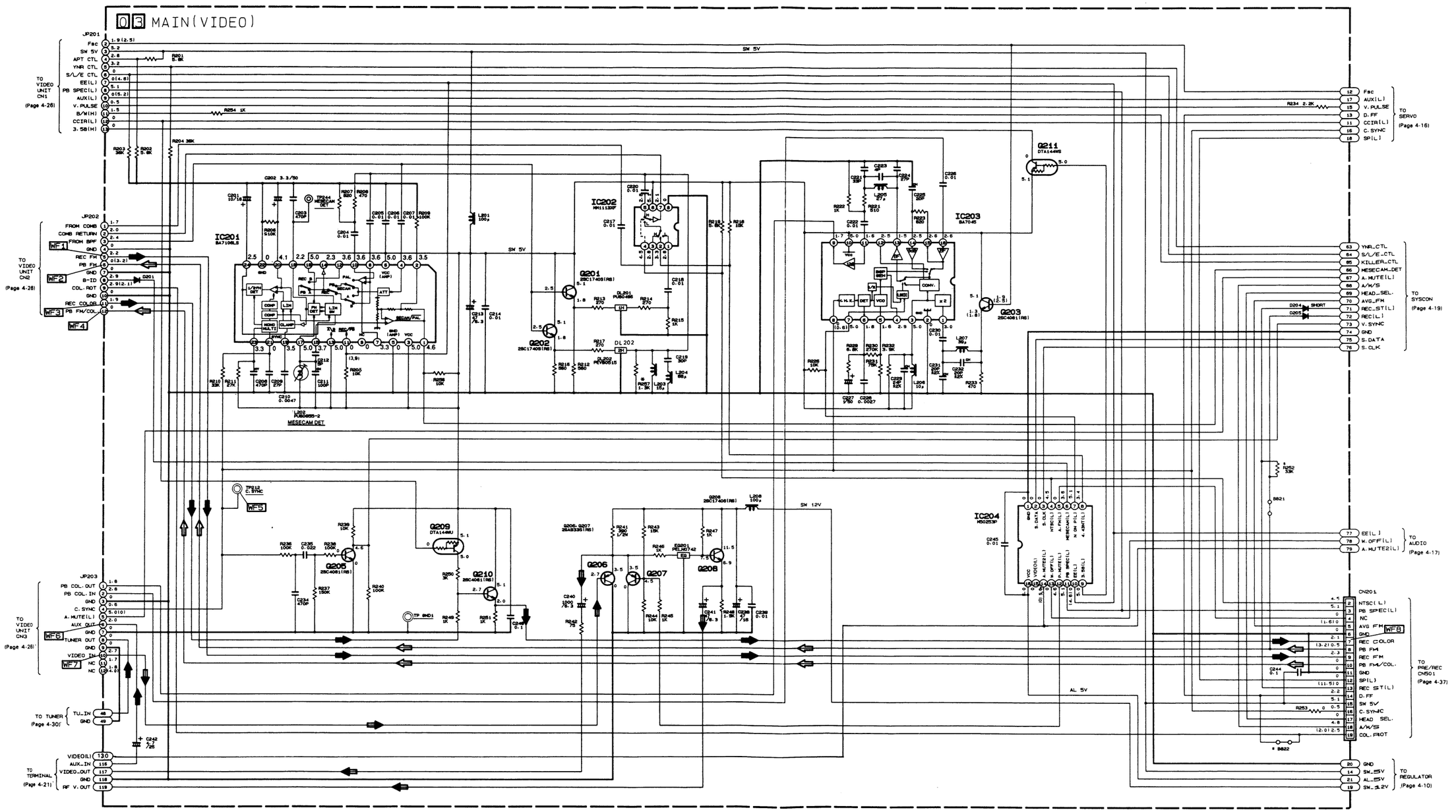
REF. No.	LOCATION
DIODE	
D1	4B
D2	4B
D3	4B
D4	4B
D6	4B
D7	3B
D8	3B
D9	3A
D10	3B
D31	2B

REF. No.	LOCATION
DIODE	
D32	2B
D33	2B
D35	2B
D36	2B
D37	2A
D38	2A
D40	2B
D41	1B
D42	1A
D43	2A

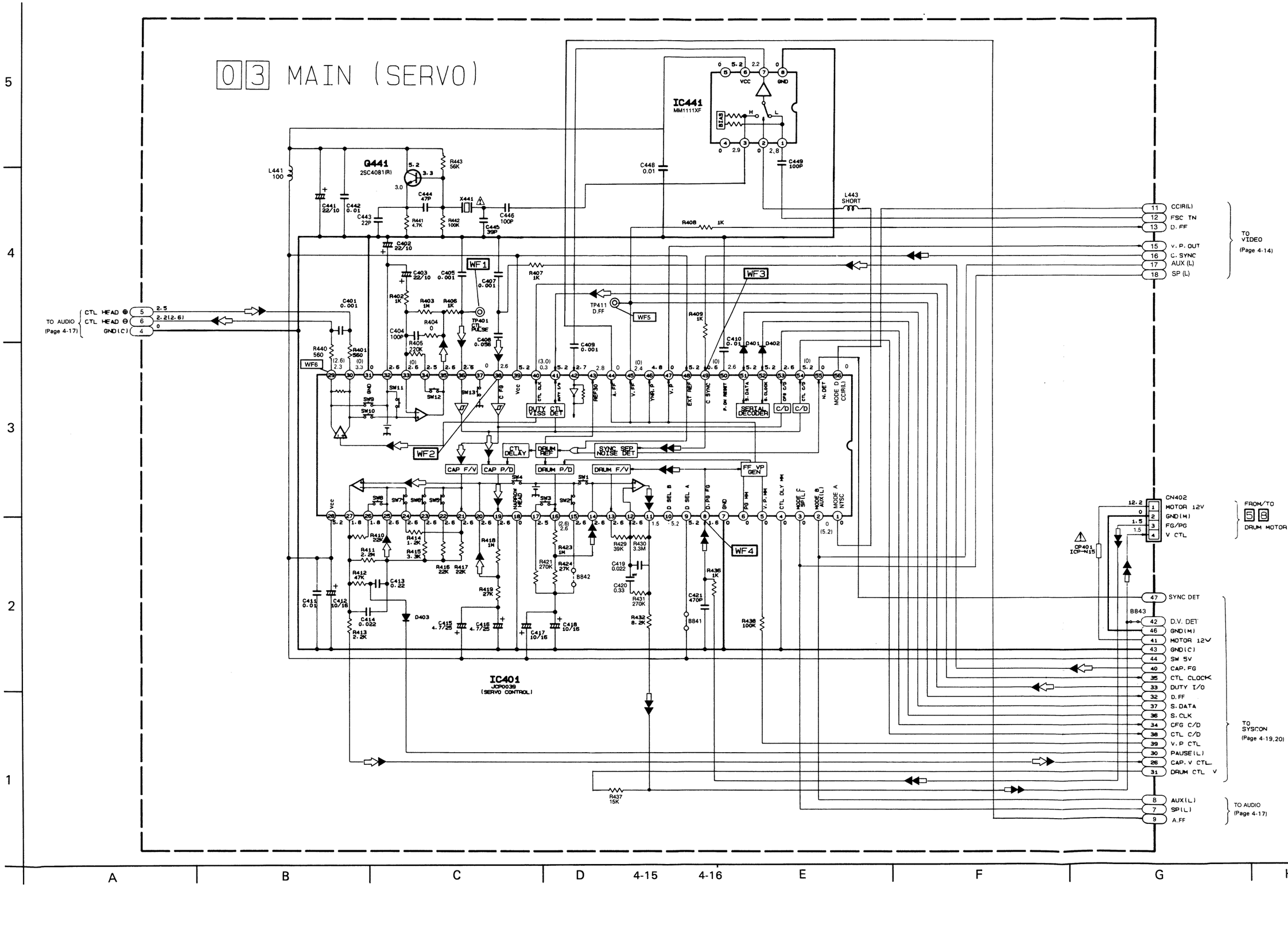
REF. No.	LOCATION
CONNECTOR	
CN1	1A

REF. No.	LOCATION
CP	
CP1	1A

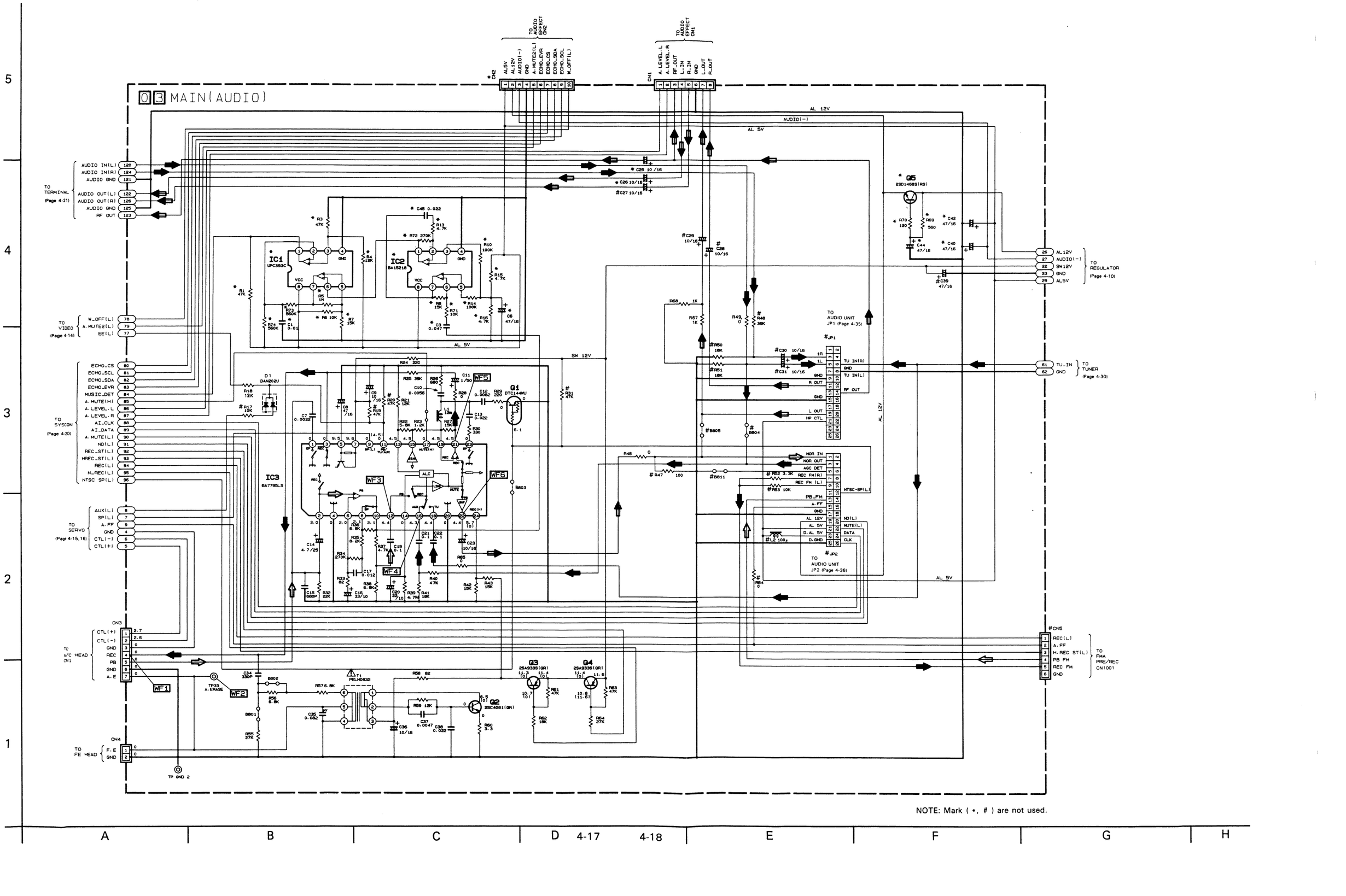
4.6 VIDEO SCHEMATIC DIAGRAM



4.7 SERVO SCHEMATIC DIAGRAM

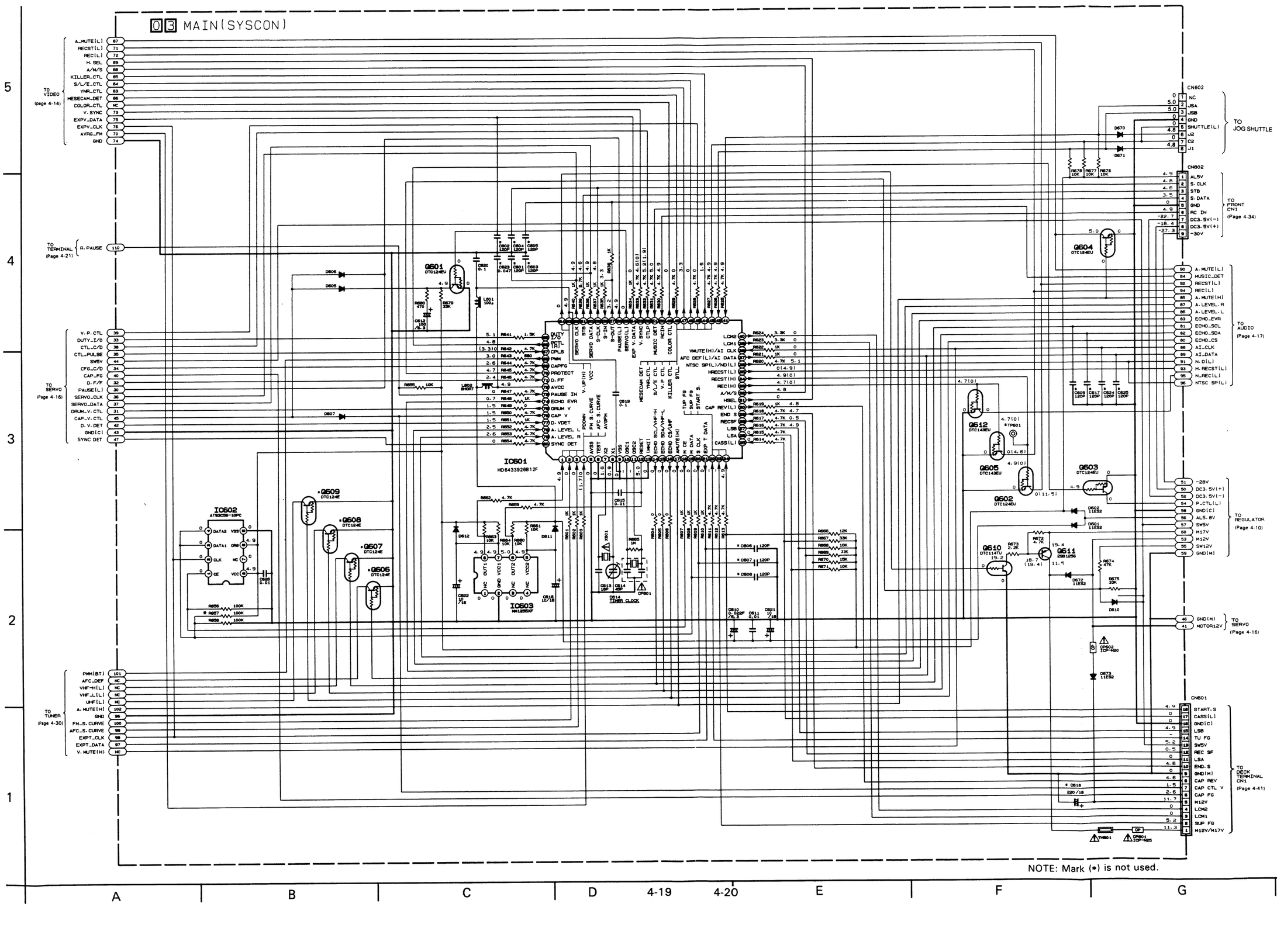


4.8 AUDIO SCHEMATIC DIAGRAM

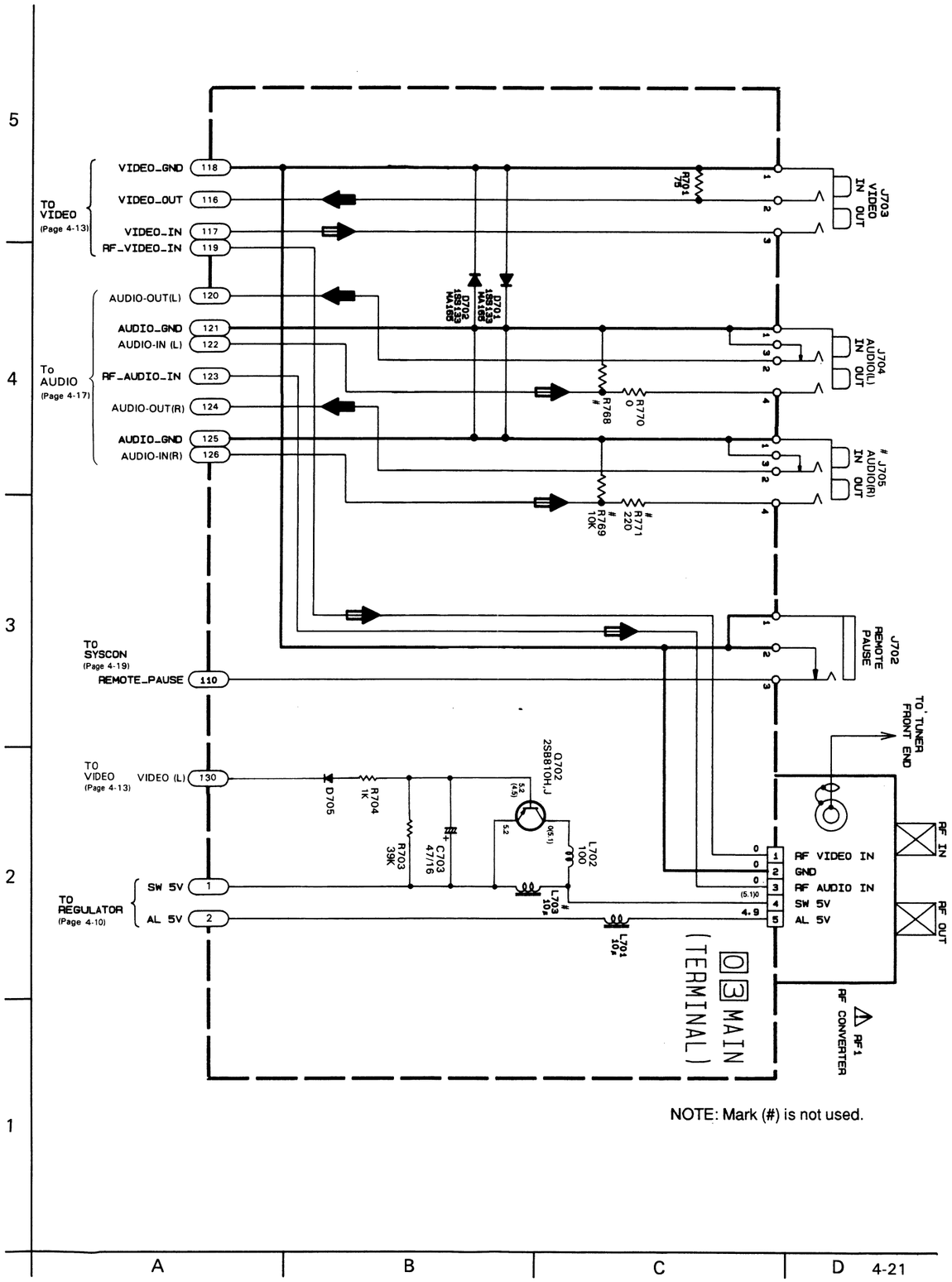


NOTE: Mark (*, #) are not used.

4.9 SYSCON SCHEMATIC DIAGRAM



4.10 TERMINAL SCHEMATIC DIAGRAM



NOTE: Mark (#) is not used.

4.11 MAIN CIRCUIT BOARD

MAIN COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

REF. No.	LOCATION
IC	
IC3	12M
IC201	20D
IC202	20F
IC203	19F
IC204	14C
IC401	12J
IC441	18B
IC601	7E
IC602	6G
IC603	9F
IC901	9M
IC902	6L
TRANSISTOR	
Q1	14N
Q2	12O
Q3	12N
Q4	13N
Q201	21H
Q202	21H
Q203	19E
Q205	18C
Q206	21M
Q207	21M
Q208	21O
Q209	21I
Q210	21I
Q211	21G
Q441	20B
Q601	8B
Q602	12D
Q603	9D
Q604	13K
Q605	12D
Q610	4I
Q611	4L
Q612	11D
Q702	9O
Q801	1C
Q802	3D
Q803	3D
Q804	2D
Q805	2C
Q901	8L
Q902	6L
Q903	7L
Q904	8L
Q905	4M
Q906	6N
Q911	10N
DIODE	
D1	14M
D201	21I
D205	16L
D401	16F
D402	16F
D403	12E
D601	4G
D602	4G
D605	10D
D606	10D
D607	10D
D610	5B
D611	10F
D612	9F
D671	2A
D672	3J
D673	6J
D701	11P
D702	11P
D705	11O
D802	3C
D803	3B
D804	1F
D901	8N

REF. No.	LOCATION
CONNECTOR	
CN3	9K
CN4	11K
CN201	17L
CN402	9K
CN601	7J
CN602	2B
CN801	2E
CN802	2A
ADJUSTMENT	
C614	6F
R805	3C
TEST POINT	
TP33	11N
TP212	19C
TP244	20O
TP401	20I
TP411	19H
TP801	1D
TP802	3C
TPGND1	20H
TPGND2	13O
CP	
CP401	7K
CP601	5K
CP602	5K
CP801	2E

LEADLESS COMPONENT PARTS LOCATION GUIDE <MAIN PWB>

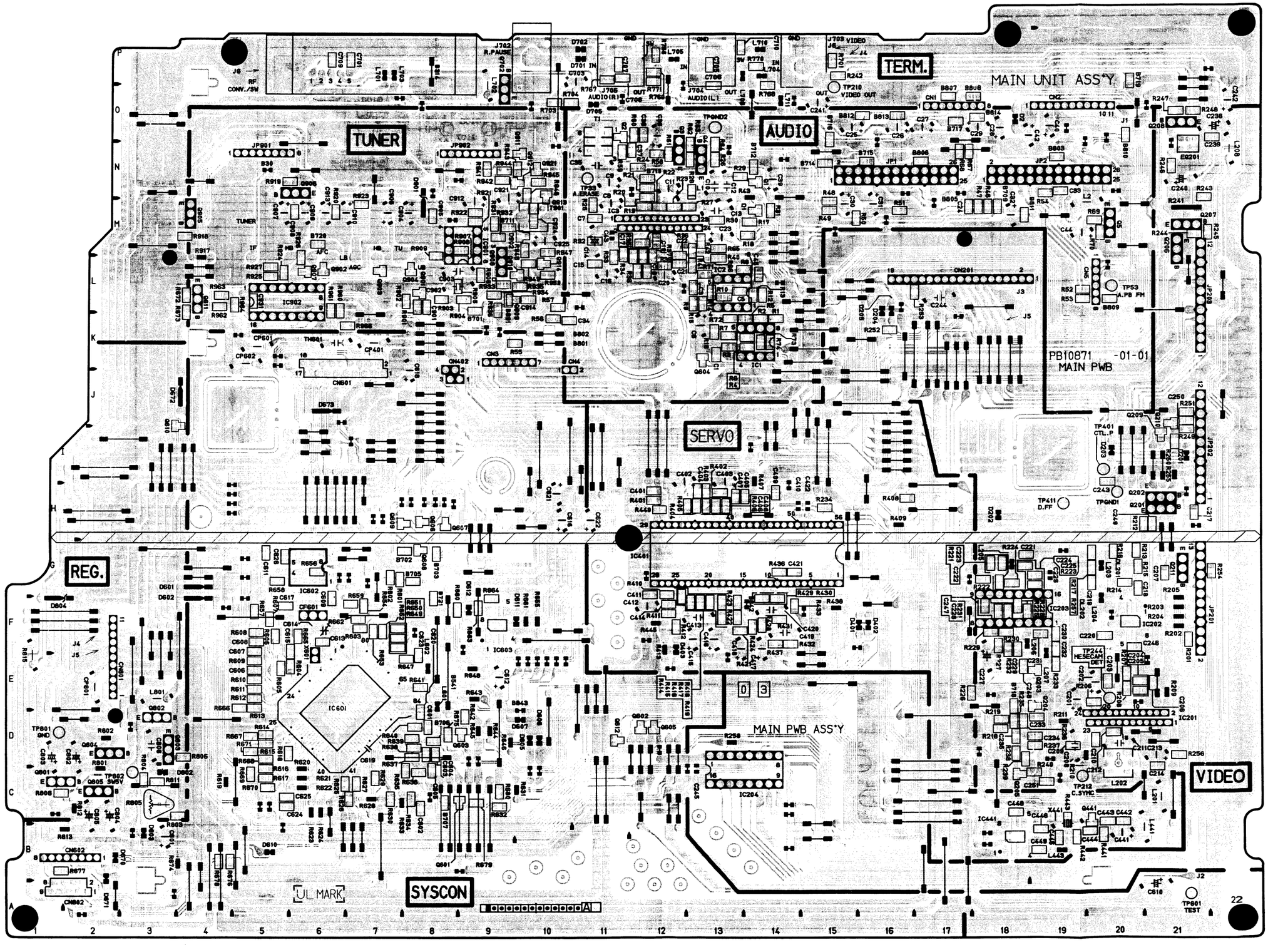
REF. No.	LOCATION
IC	
IC202	20F
IC441	18B
IC603	9F
TRANSISTOR	
Q1	14N
Q2	12O
Q203	19E
Q204	19D
Q205	18C
Q209	21I
Q210	21I
Q441	20B
Q601	8B
Q602	12D
Q603	9D
Q604	13K
Q605	12D
Q606	8H
Q607	8H
Q608	8G
Q609	8H
Q610	4I
Q612	11D
Q901	8L
Q902	6L
Q903	7L
Q904	8L
Q907	6L
Q909	10L
Q910	10L
Q911	10N
Q912	10N
Q913	10N
Q914	10L
Q921	10N
DIODE	
D1	14M
D902	10M
RESISTOR	
R1	14K
R2	14K
R3	13K
R4	13J
R5	14K
R6	13J
R7	13K
R8	14L
R9	13L
R10	13L
R12	14L
R13	14L
R14	13L
R15	13L
R16	13K
R17	14M
R18	14M
R19	12M
R20	12N
R21	12N
R22	12N
R23	12M
R24	12N
R25	11M
R26	13N
R27	12N
R28	13N
R29	14N
R30	13M
R31	14M
R32	11M
R33	11M
R34	12M
R35	12M
R36	12M
R37	12M
R38	12L
R39	12L
R40	13M

REF. No.	LOCATION
RESISTOR	
R41	13L
R42	13M
R46	18N
R47	18N
R48	15M
R49	15M
R50	16M
R51	16M
R52	19L
R53	19L
R54	19N
R55	10K
R56	10K
R57	10L
R58	12N
R59	11N
R60	12O
R61	12O
R62	13O
R63	13O
R64	13N
R65	13M
R66	13L
R67	18N
R68	17N
R69	20M
R70	20M
R71	13L
R72	13K
R73	14K
R74	14K
R201	21F
R206	20E
R207	20E
R208	20E
R212	21H
R213	20G
R214	20G
R215	20G
R216	20G
R217	20G
R218	18D
R219	18D
R221	18G
R222	18G
R223	19G
R224	18G
R225	19F
R226	19F
R227	19F
R228	19F
R229	18F
R230	18F
R231	17F
R232	18E
R233	19E
R234	15H
R235	18E
R236	19D
R237	19D
R238	18D
R239	18C
R240	19C
R242	15P
R243	21N
R244	21M
R245	22M
R246	21N
R247	21O
R248	21O
R249	21I
R250	21I
R251	21J
R252	16K
R253	17L
R254	22G
R256	21D
R257	19F
R401	12H
R402	13H
R403	13H
R404	13H

REF. No.	LOCATION
RESISTOR	
R405	13H
R406	14H
R408	16H
R410	12G
R411	12F
R412	12F
R414	13F
R415	13F
R416	13F
R417	13F
R418	13F
R419	13F
R421	14E
R422	13F
R423	13F
R424	14F
R428	14F
R429	14F
R430	14F
R431	14F
R432	15F
R433	15F
R436	14G
R437	14F
R440	12H
R441	20B
R442	19B
R443	19C
R601	7G
R602	7G
R603	7F
R604	6E
R605	5E
R606	5F
R607	5F
R608	5F
R609	5E
R610	5E
R611	5E
R612	5E
R613	5E
R614	5D
R615	5D
R616	5C
R617	5C
R618	6D
R625	7C
R626	7C
R627	7C
R629	7C
R630	7C
R632	9C
R634	8C
R635	8C
R636	8C
R637	7D
R638	7D
R639	7D
R640	7D
R641	8E
R642	9D
R647	8E
R649	8F
R650	8F
R651	8F
R652	7F
R653	7F
R654	7F
R656	6G
R657	5F
R658	5G
R659	7F
R660	9F
R662	7F
R663	9F
R664	9F
R665	6F
R666	5E
R667	5D
R668	5D
R669	5C
R670	5C

REF. No.	LOCATION
RESISTOR	
R671	5D
R672	4L
R673	4L
R675	8D
R676	4B
R677	2B
R678	4B
R679	9B
R680	9C
R701	15P
R703	10O
R704	11O
R766	12P
R767	11P
R768	14O
R769	12P
R770	14P
R771	12P
R803	4C
R804	3C
R806	4D
R808	1C
R811	3C
R901	8L
R902	8L
R903	8L
R904	9L
R905	9L
R906	9L
R907	9M
R908	9M
R909	9M
R918	4M
R919	6N
R920	6M
R921	9M
R922	9M
R923	7M
R924	6L
R925	5L
R926	6M
R927	5L
R931	9M
R932	9M
R933	9L
R934	10L
R935	10L
R936	9L
R941	9N
R942	9N
R943	10N
R944	9N
R945	10N
R946	10N
R947	10M
R948	10M
R949	10L
R950	10L
R960	7L
R961	6L
R962	4L
R963	4L
R964	5L
R966	7K
CAPACITOR	
C1	13K
C3	13L
C5	14L
C7	11M
C15	11L
C17	11M
C18	12L
C19	12M
C21	13L
C22	13M
C24	17M
C33	19N
C34	11K
C37	12N
C38	12O
C45	14L
C203	20E
C204	20E

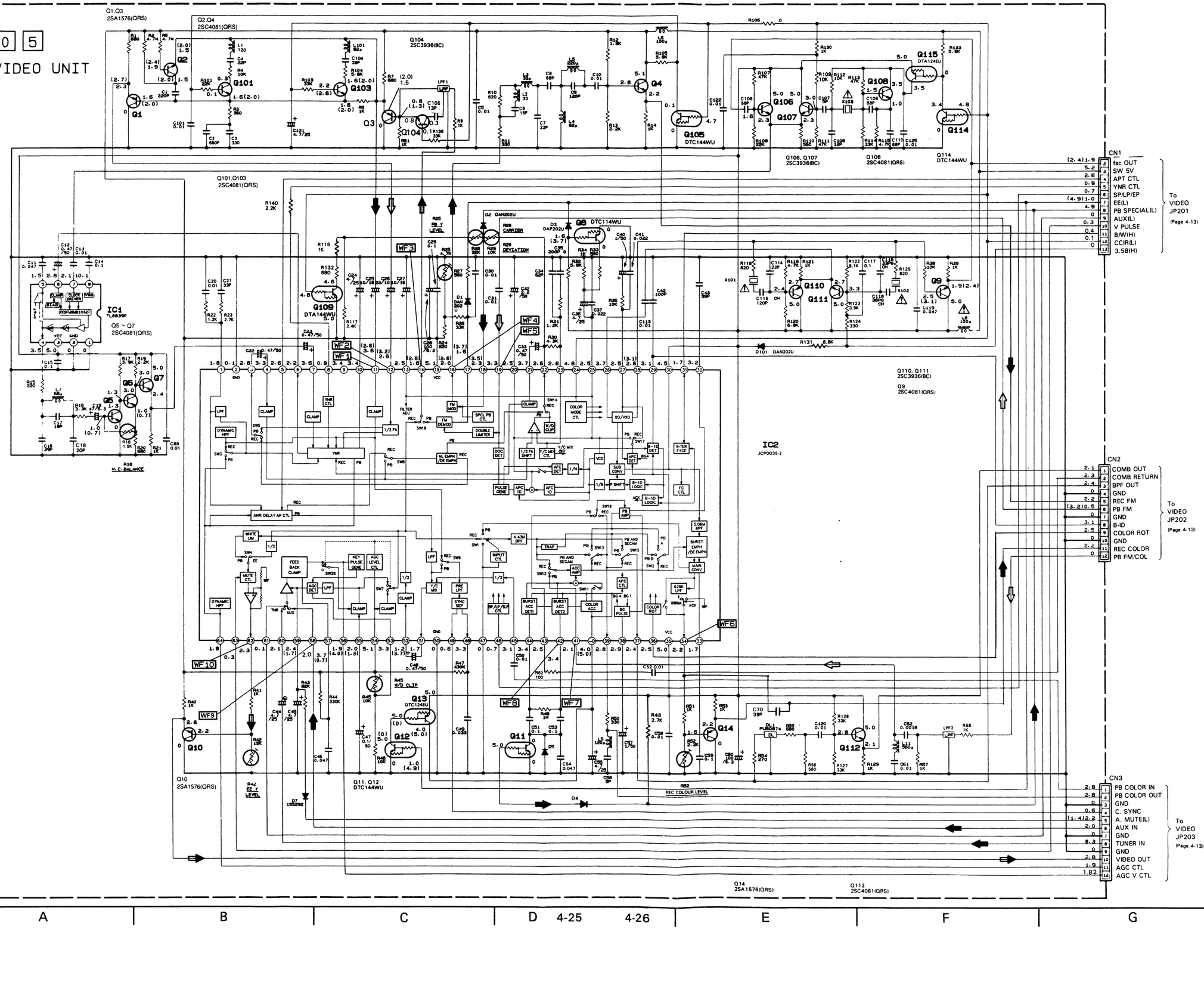
REF. No.	LOCATION
CAPACITOR	
C205	20E
C206	21E
C207	21G
C209	19D
C210	20D
C212	20C
C214	21C
C217	21H
C218	20G
C219	20G
C220	20F
C221	18G
C222	17G
C223	17G
C224	19G
C225	19G
C228	17F
C229	18E
C230	19F
C231	18E
C232	19E
C233	19D
C234	19D
C235	18D
C239	22O
C243	20H
C246	20E
C247	17F
C248	18E
C249	20H
C250	21J
C251	21J
C401	12H
C404	13H
C405	14H
C406	14H
C407	14H
C408	14H
C409	14H
C411	12F
C414	12F
C421	14G
C442	15H
C443	20B
C444	20B
C445	19B
C446	19B
C448	18C
C449	19B
C601	8D
C602	8C
C603	8D
C604	8D
C605	8C
C606	5E
C607	5F
C608	5F
C609	6F
C611	5G
C613	6F
C615	6F
C617	6F
C620	8F
C623	8F
C624	6C
C625	6C
C626	6G
C701	7P
C705	13P
C706	13P
C707	11P
C708	12O
C709	6P
C710	14P
C901	8L
C905	8M
C908	6M
C914	10L
C924	10M
C931	5L


TUNER
AUDIO
TERM.
MAIN UNIT ASS'Y
SERVO
REG.
SYSCON
VIDEO
MAIN PWB ASS'Y
PB10871 -01-01
MAIN PWB
IC601
UL MARK

4.12 VIDEO UNIT SCHEMATIC DIAGRAM

0 5

VIDEO UNIT



4-25 4-26

4.13 VIDEO UNIT CIRCUIT BOARD

MAIN COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
IC	
IC1	9C
IC2	3B

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
Q4	6D
Q5	8D
Q6	9D
Q7	8C
Q8	7D
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q101	2C
Q102	3D
Q103	1C

REF. No.	LOCATION
TRANSISTOR	
Q104	1D
Q105	3D
Q106	6C
Q107	6C
Q108	8C
Q109	3C
Q110	5C
Q111	5D
Q112	6A
Q114	9B
Q115	8C

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D3	8D
D4	7A
D5	4A
D6	3B
D7	3A
D101	6C

REF. No.	LOCATION
CONNECTTOR	
CN1	8A
CN2	5A
CN3	2A

REF. No.	LOCATION
ADJUSTMENT	
R18	8D
R25	3B
R28	4C
R29	4C
R42	1B
R45	3B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT BOARD>

REF. No.	LOCATION
TRANSISTOR	
Q1	2C
Q2	2D
Q3	1D
D4	6D
Q5	8D
Q6	9D
Q7	8C
Q8	7D
Q9	5C
Q10	2B
Q11	4A
Q12	4B
Q13	5B
Q14	5A
Q101	2C
Q102	3D
Q103	1C
Q104	1D
Q105	3D
Q106	6C
Q107	6C
Q108	8C
Q109	3C
Q110	5C

REF. No.	LOCATION
TRANSISTOR	
Q111	5D
Q112	6A
Q114	9B
Q115	8C

REF. No.	LOCATION
DIODE	
D1	3B
D2	4D
D3	8D
D6	3B
D101	6C

REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2C
R4	2D

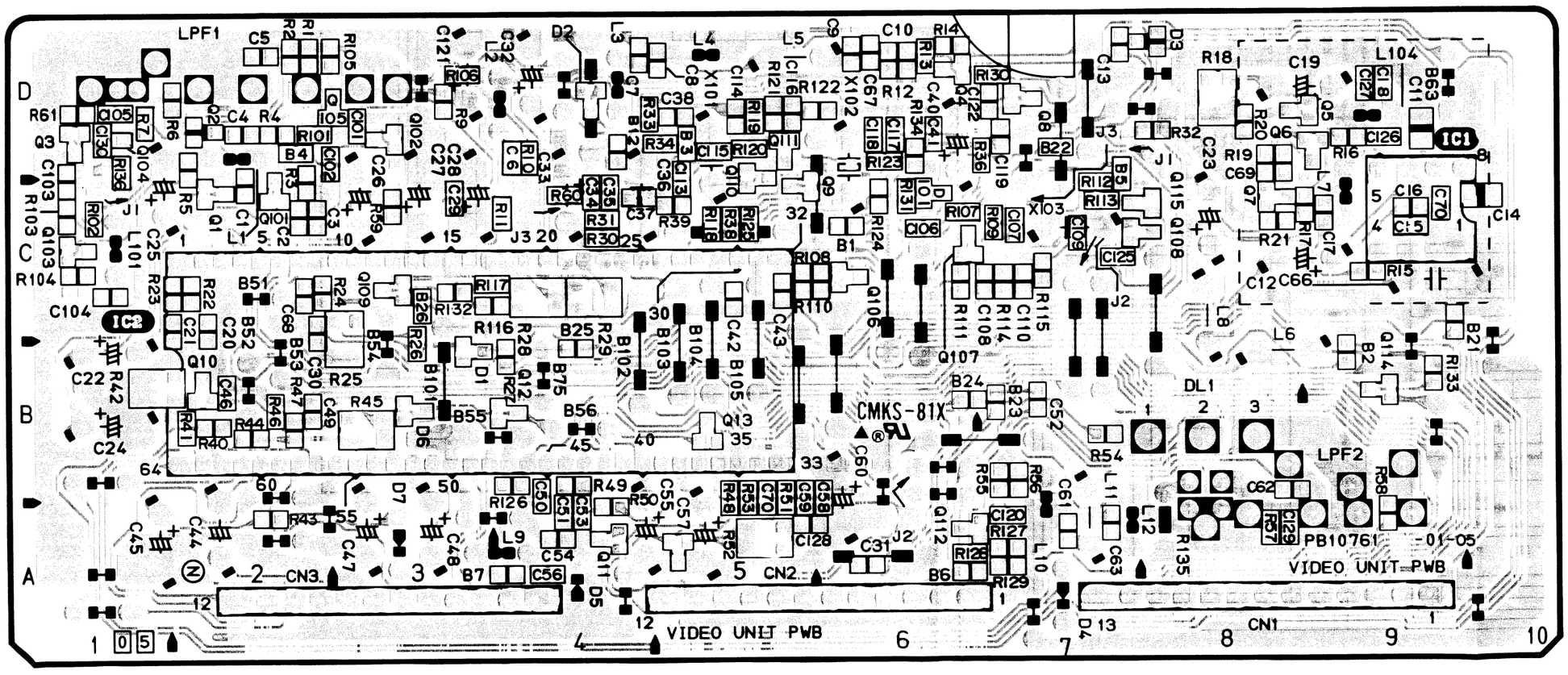
REF. No.	LOCATION
RESISTOR	
R5	2D
R6	2D
R7	1D
R9	3D
R10	4C
R11	4C
R12	6D
R13	6D
R14	6D
R15	9C
R16	9D
R17	9B
R18	8D
R19	8D
R20	8D
R21	8C
R22	2C
R23	2C
R24	2B
R25	3B
R26	3B
R27	4B
R28	4C
R29	4C

REF. No.	LOCATION
RESISTOR	
R30	4C
R31	4C
R32	8D
R33	4C
E34	5C
R36	7D
R38	5C
R39	5C
R40	2B
R41	2B
R42	1B
R43	2A
R44	2B
R45	3B
R46	2B
R47	2B
R48	5A
R49	4A
R50	4A
R51	5A
R52	5A
R53	5A
R54	7B
R55	7B

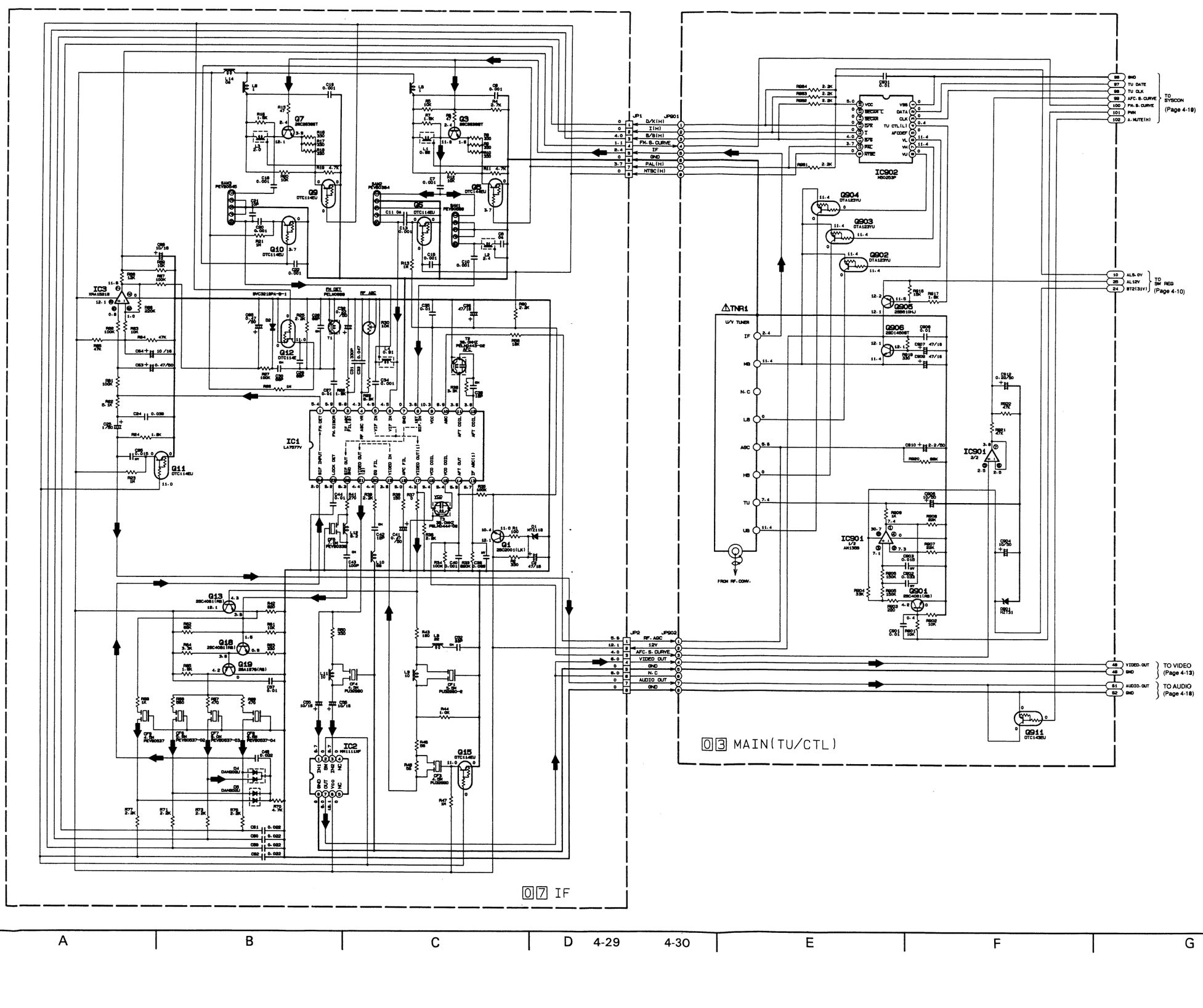
REF. No.	LOCATION
RESISTOR	
R56	7B
R57	8A
R58	9A
R59	3C
R60	4C
R61	1D
R101	2D
R103	1C
R104	1C
R105	2D
R106	3D
R107	6B
R108	5C
R109	7B
R110	5C
R111	6C
R112	7C
R113	7C
R114	7C
R115	7C
R116	4C
R117	4C
R118	5C
R119	5D
R120	5D
R121	5D
R122	6D
R123	6D
R124	6C
R125	5C
R126	4A
R127	7A
R128	6A
R129	7A
R130	7D
R131	6C
R132	3C
R133	9B
R134	6D
R136	1C

REF. No.	LOCATION
CAPACITOR	
C1	2C
C2	2C
C3	2C
C4	2D
C5	2D
C6	4D
C7	4D
C8	5D
C9	6D
C10	6D
C11	9D
C13	7D
C14	10C
C15	9C
C16	9C
C17	9C
C18	9D
C20	2C
C21	2C
C29	3C
C30	2B

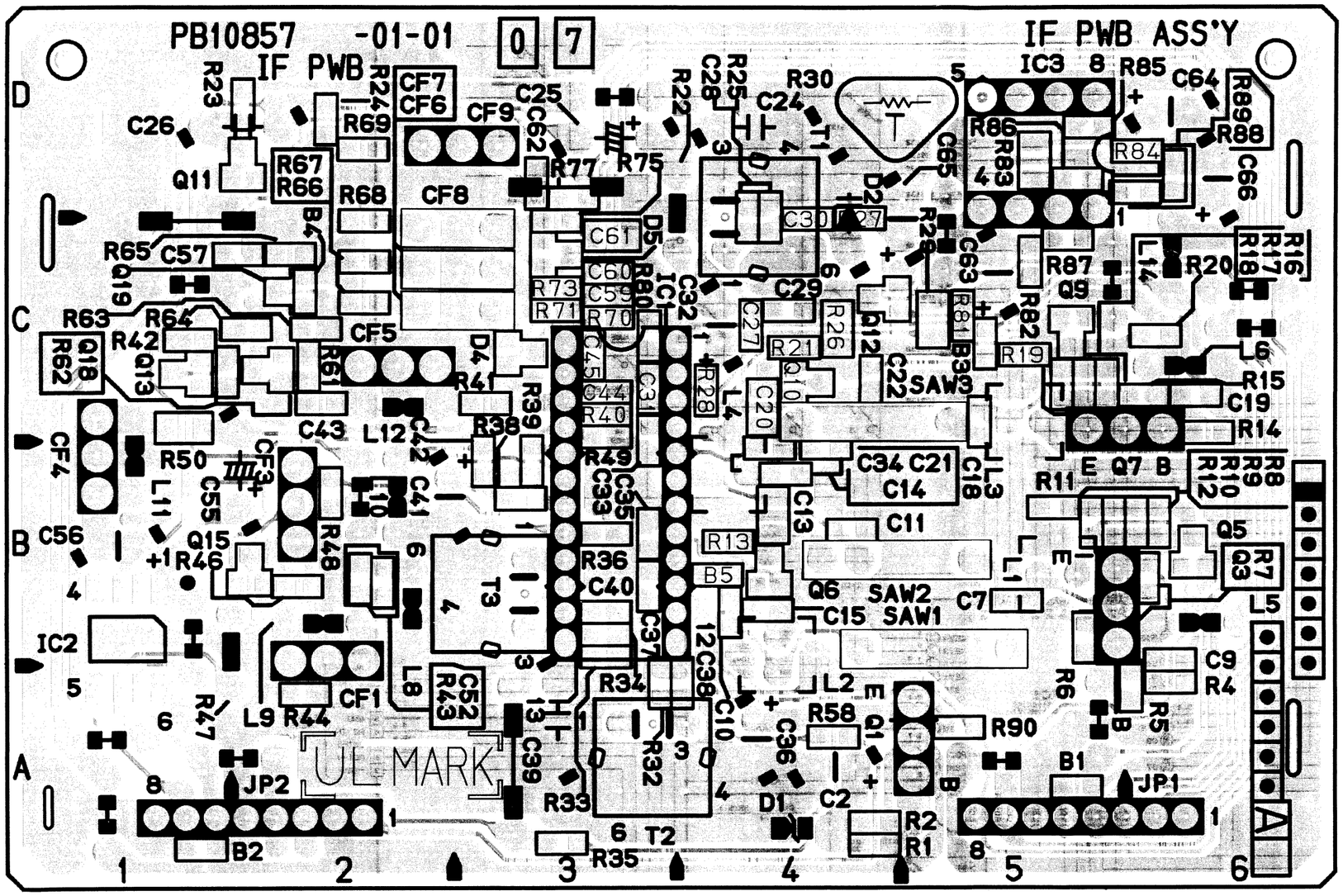
REF. No.	LOCATION
CAPACITOR	
C31	6A
C34	4C
C35	4C
C37	4C
C38	5D
C41	6D
C42	5C
C43	5C
C46	2B
C49	2B
C49	2B
C50	4A
C51	4A
C52	7B
C53	4A
C54	4A
C56	4A
C58	6A
C59	5A
C61	7A
C62	8B
C63	7A
C67	6D
C68	2C
C69	8C
C70	5A
C101	3D
C102	2D
C103	1D
C104	1C
C105	1D
C106	6C
C107	7C
C108	7C
C109	7C
C110	7C
C113	5C
C114	5D
C115	5D
C116	5D
C117	6D
C118	6D
C119	7D
C120	7A
C122	7D
C125	7C
C126	9D
C127	9D
C128	5A
C129	8A



4.14 IF & TUNER CTL SCHEMATIC DIAGRAMS



4.15 IF CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <IF PWB>

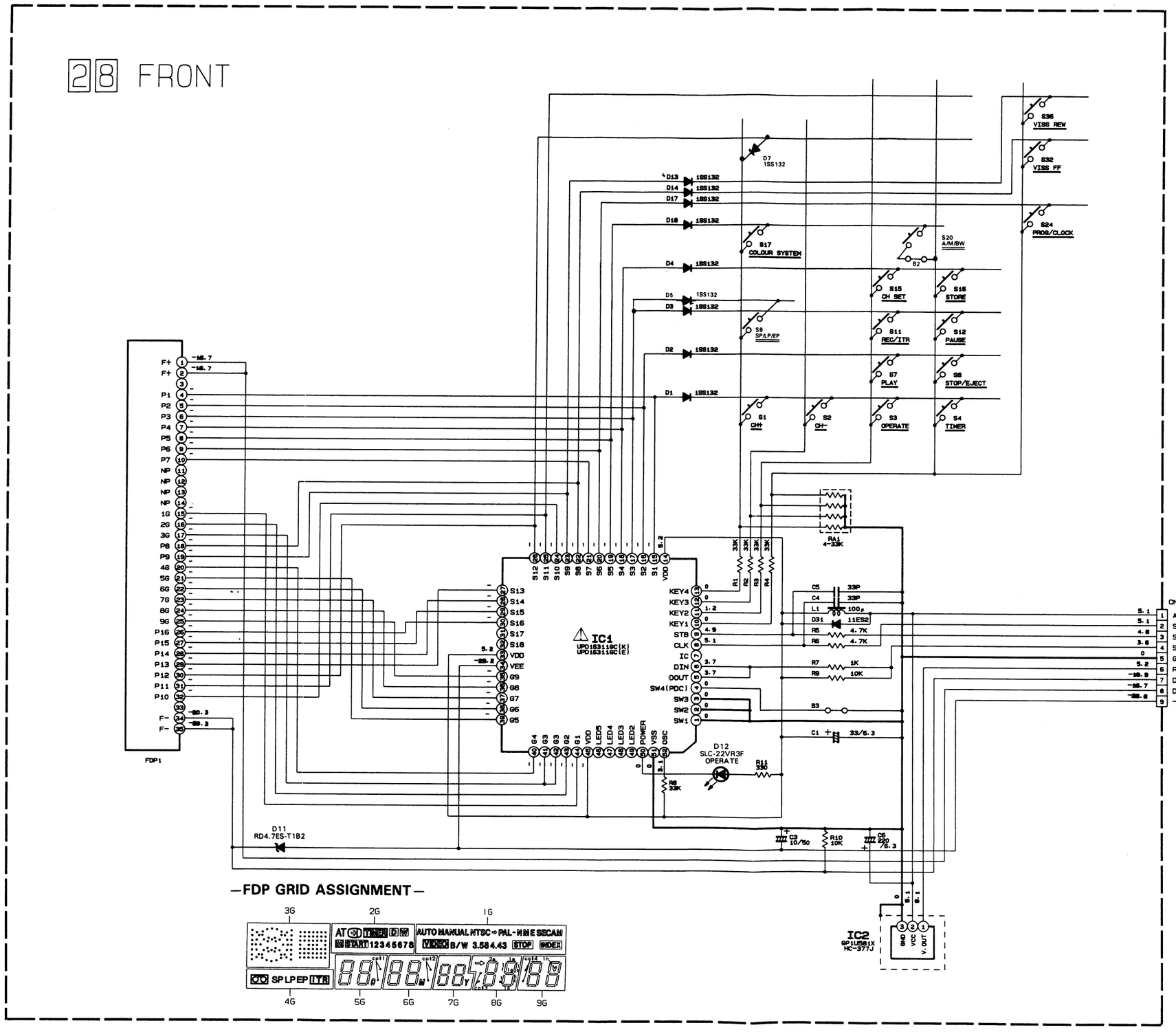
REF. No.	LOCATION
IC	
IC1	3C
IC3	5D
TRANSISTOR	
Q1	5A
Q18	2C
Q19	2C
DIODE	
D1	4A
D2	4D
D4	3C
D5	3C
CONNECTOR	
JP1	5A
JP2	2A
ADJUSTMENT	
R30	4D
T1	4D
T2	3A
T3	3B

LEADLESS COMPONENT PARTS LOCATION GUIDE <IF PWB>

REF. No.	LOCATION
IC	
IC2	1B
TRANSISTOR	
Q5	6B
Q6	4B
Q9	5C
Q10	4C
Q11	1D
Q12	4C
Q13	1C
Q15	2B
Q18	2C
Q19	2C
DIODE	
D4	3C
D5	3C
RESISTOR	
R1	4A
R2	4A
R4	6A
R5	6A
R6	5A
R7	5B
R8	6B
R9	6B
R10	5B
R11	6B
R12	5B
R13	4B
R14	6C
R15	6C
R16	5C
R17	5C
R18	5C
R19	5C
R20	6C
R21	4C
R23	2D
R24	2D
R25	4D
R26	4C
R27	4D
R28	4C
R29	5C
R32	3A
R33	3A
R34	3B
R35	3A
R36	3B
R38	3C
R39	3C
R40	3C
R41	3C
R42	1C
R43	2A
R44	2A
R46	1B
R48	2B
R49	3B

REF. No.	LOCATION
RESISTOR	
R50	1C
R58	4A
R61	2C
R62	1C
R63	1C
R64	1C
R65	1C
R66	2D
R67	2D
R68	2D
R69	2D
R70	3C
R71	3C
R73	3C
R75	3D
R77	3D
R80	3C
R81	5C
R82	5C
R83	5D
R84	6D
R85	6D
R86	5D
R87	5C
R88	6D
R89	6D
R90	5A
CAPACITOR	
C7	5B
C9	6B
C10	4B
C11	4B
C13	4B
C14	4B
C15	4B
C18	5B
C19	6C
C20	4C
C21	4B
C22	4C
C27	4C
C28	4D
C29	4C
C30	4D
C31	3C
C33	3B
C34	4B
C35	3B
C37	3A
C38	4A
C40	3B
C42	2B
C43	2C
C44	3C
C45	3C
C52	3A
C57	1C
C59	3C
C60	3C
C61	3C
C62	3D

4.16 FRONT SCHEMATIC DIAGRAM



—FDP GRID ASSIGNMENT—

4.17 FRONT CIRCUIT BOARD

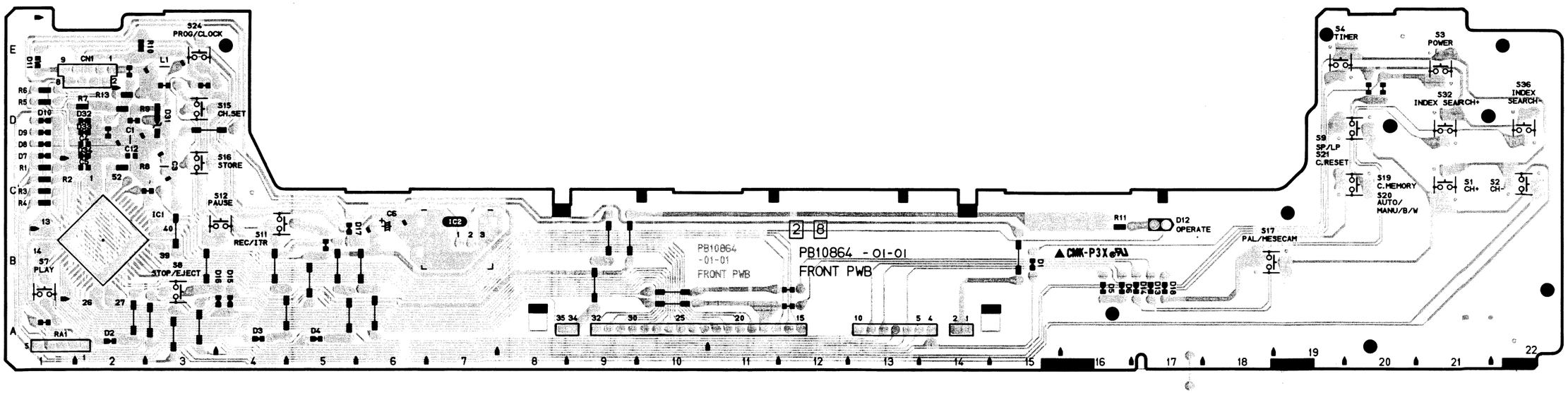
MAIN COMPONENT PARTS LOCATION GUIDE

REF. NO.	LOCATION
IC	
IC1	2C
IC2	7C

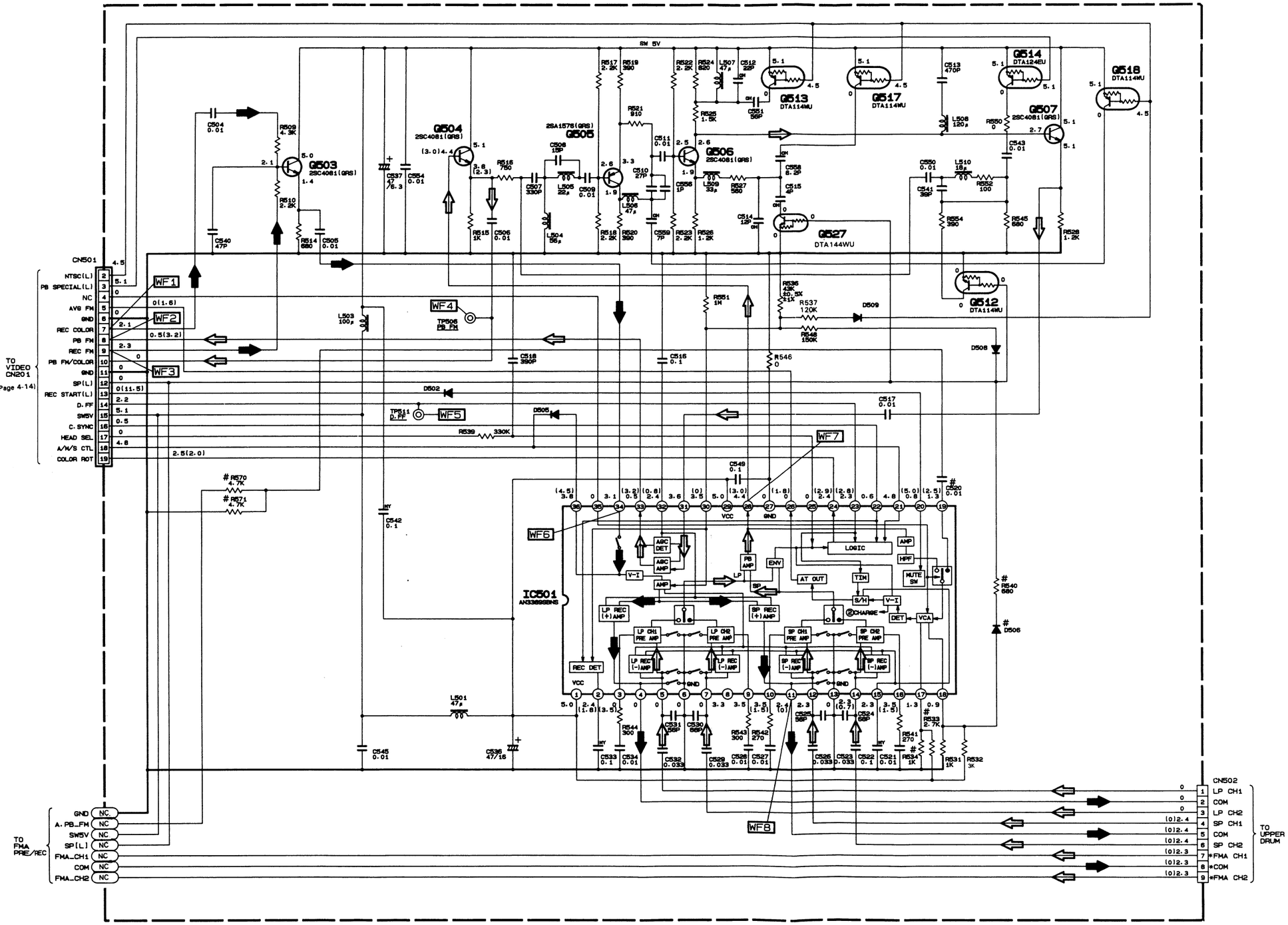
REF. NO.	LOCATION
CONNECTOR	
CN1	2E

REF. NO.	LOCATION
DIODE	
D1	15B
D2	2A
D3	4A
D4	5A
D5	16B
D7	1C
D11	1E

REF. NO.	LOCATION
DIODE	
D12	17C
D13	17B
D14	17B
D17	5B
D18	17B
D31	3D

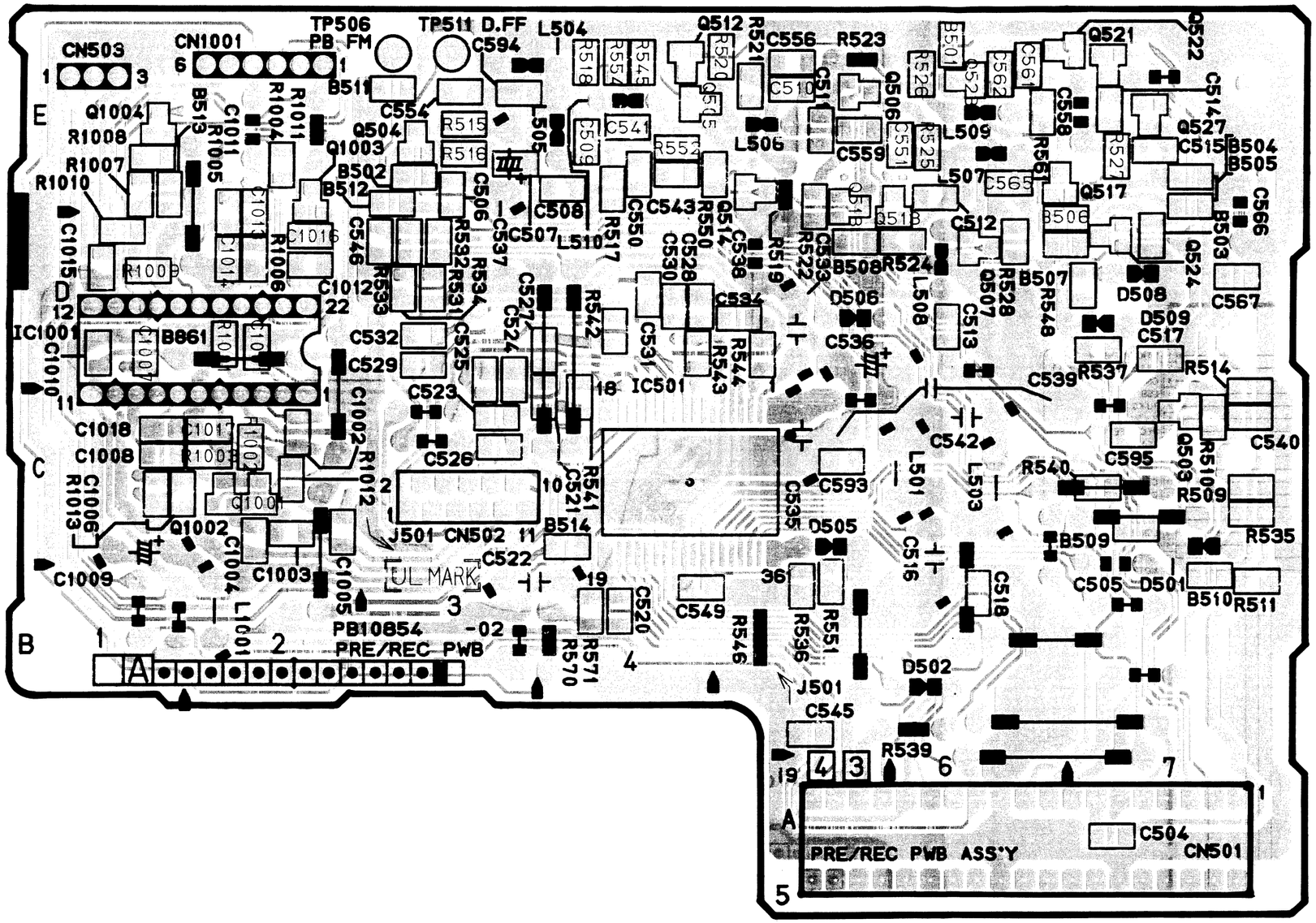


4.18 PRE/REC SCHEMATIC DIAGRAM



NOTE: Mark (*, #) are not used.

4.19 PRE/REC CIRCUIT BOARD



MAIN COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

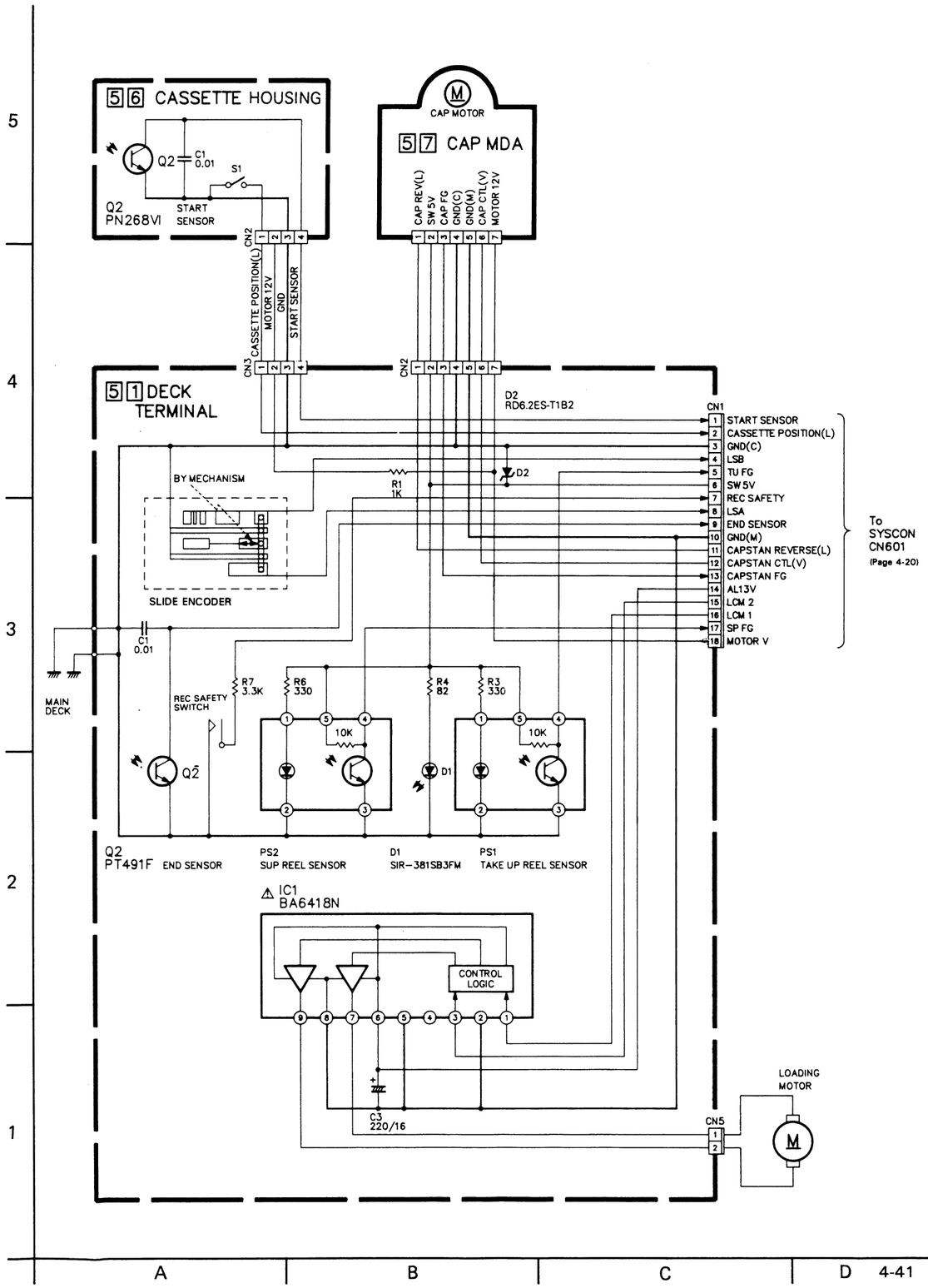
REF. No.	LOCATION
IC	
IC501	4C
IC1001	1D
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	5E
Q507	6D
Q512	6D
Q513	5E
Q514	5E
Q517	6E
Q518	5E
Q527	7E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
DIODE	
D502	7B
D505	5C
D506	5D
D508	7D
D509	7D
CONNECTOR	
CN501	7A
CN502	3C
CN1001	2E
TEST POINT	
TP506	3E
TP511	3E

LEADLESS COMPONENT PARTS LOCATION GUIDE <PRE/REC PWB>

REF. No.	LOCATION
IC	
IC501	4C
TRANSISTOR	
Q503	7C
Q504	3E
Q505	4E
Q506	5E
Q507	6D
Q512	6D
Q513	5E
Q514	5E
Q517	6E
Q518	5E
Q521	7E
Q522	7E
Q523	6E
Q524	7D
Q527	7E
Q1001	2C
Q1002	2C
Q1003	2E
Q1004	1E
RESISTOR	
R509	7C
R510	7C
R511	7B
R514	7D
R515	3E
R516	3E
R517	4D
R518	4E
R520	4E
R521	5E
R522	5D
R524	6D
R525	6E
R526	6E
R527	7E
R528	6D
R531	3D
R532	3D
R533	3D
R534	3D
R535	7C
R536	5B
R537	7D
R540	6C
R541	4C
R542	4D
R543	5D
R544	5D
R545	4E
R548	6D
R550	4D
R551	5B
R552	4E
R554	4E
R561	6E
R571	4B
R1001	2D
R1002	2C
R1003	2C
R1004	2E
R1005	2E
R1006	2D
R1007	1E
R1008	1E
R1009	1D
R1010	1E
R1012	1C
R1013	1C

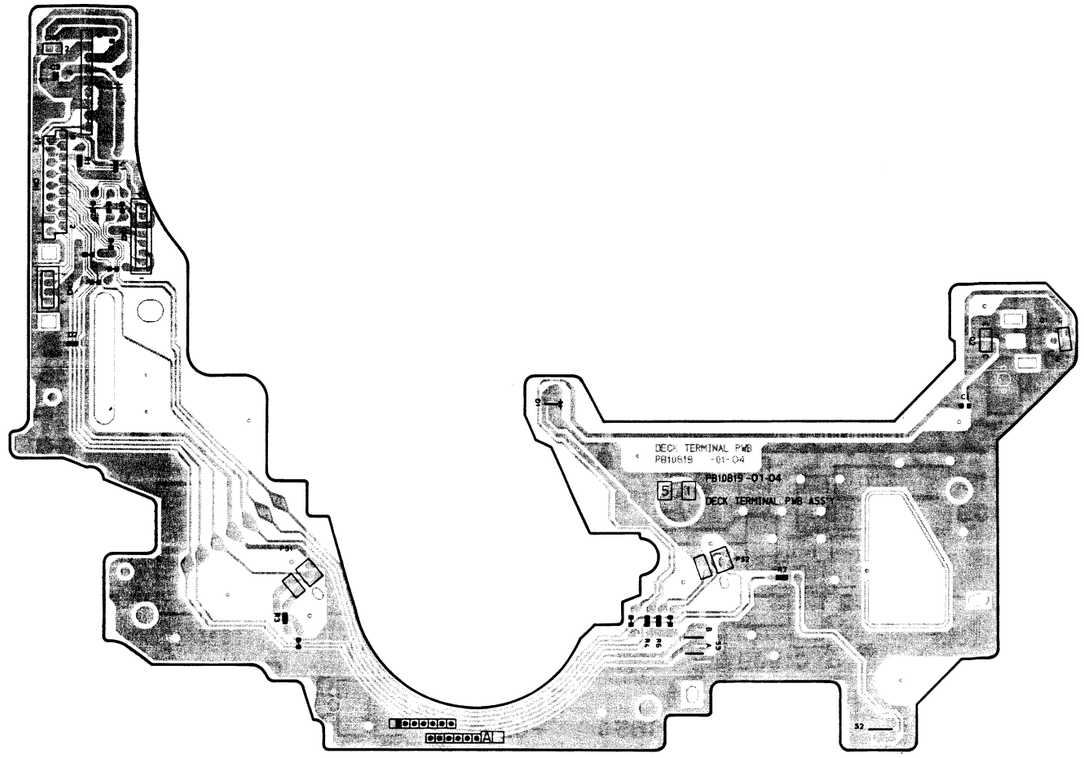
REF. No.	LOCATION
CAPACITOR	
C504	7A
C506	3E
C507	3E
C508	4E
C509	4E
C510	5E
C511	5E
C512	6E
C513	6D
C514	7E
C515	7E
C517	7D
C518	6B
C520	4B
C521	4C
C523	3C
C524	3D
C525	3D
C526	3C
C527	3D
C528	4D
C529	3D
C530	4D
C531	4D
C532	3D
C534	5D
C540	7C
C541	4E
C543	4E
C545	5B
C546	3D
C549	4B
C550	4E
C551	6E
C554	3E
C556	5E
C559	5E
C561	6E
C562	6E
C565	6E
C567	7D
C593	5C
C594	3E
C595	7C
C1001	2D
C1002	2C
C1003	2C
C1004	2C
C1005	2C
C1006	1C
C1007	1D
C1008	1C
C1010	1D
C1012	2D
C1013	2D
C1014	2D
C1015	1D
C1016	2D
C1017	2C
C1018	1C

4.20 DECK TERMINAL, CASSETTE HOUSING & CAPSTAN MDA SCHEMATIC DIAGRAMS

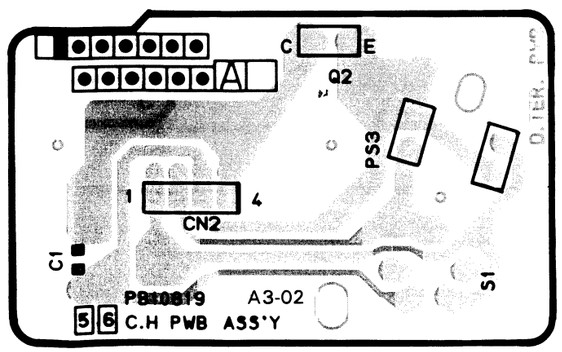


4.21 DECK TERMINAL, CASSETTE HOUSING & A/C HEAD CIRCUIT BOARDS

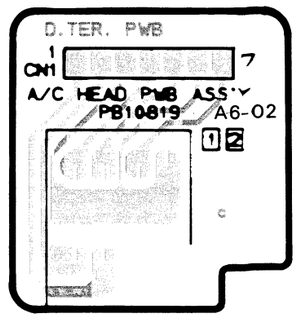
— DECK TERMINAL —



— CASSETTE HOUSING —

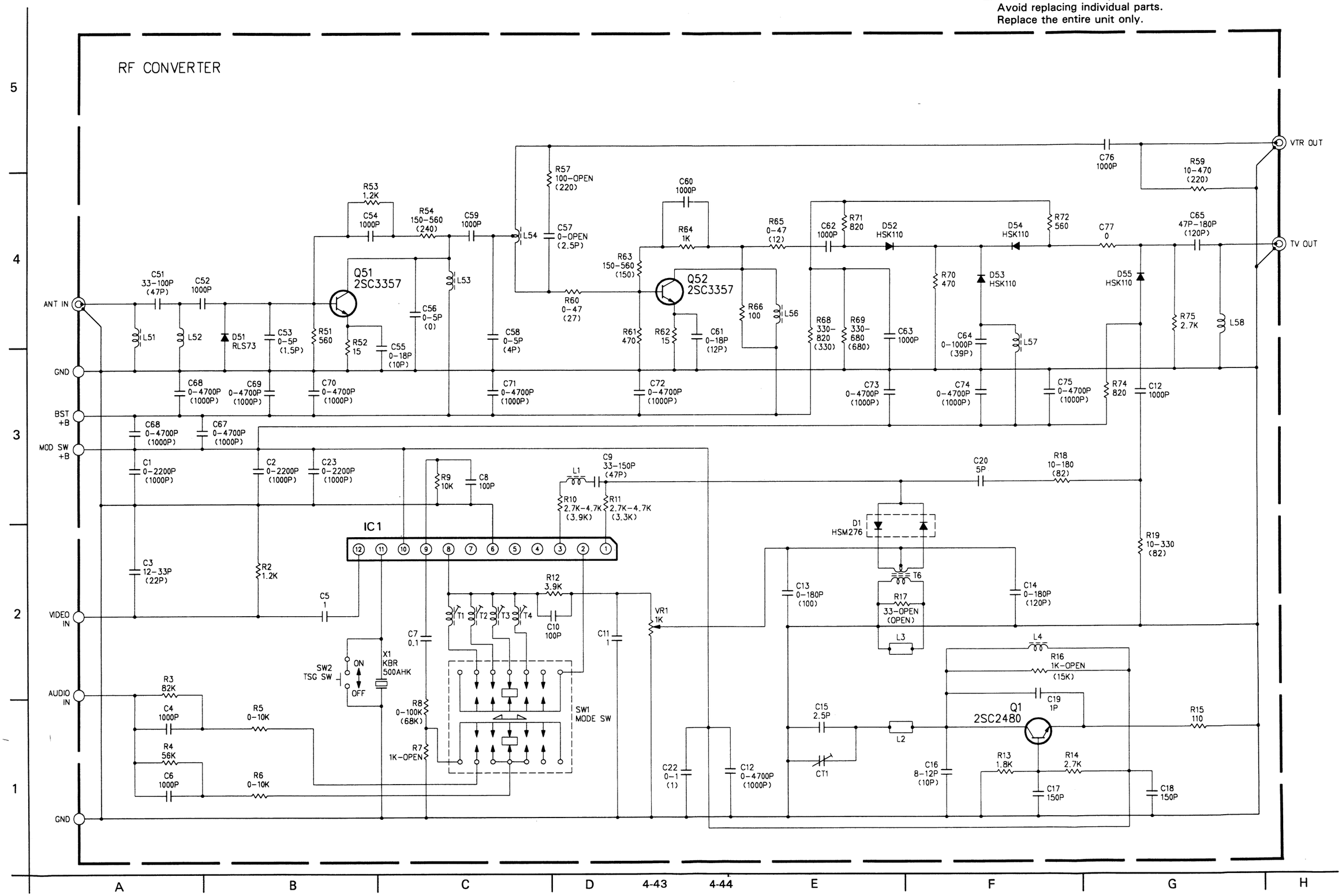


— A/C HEAD —



4.22 RF CONVERTER SCHEMATIC DIAGRAM

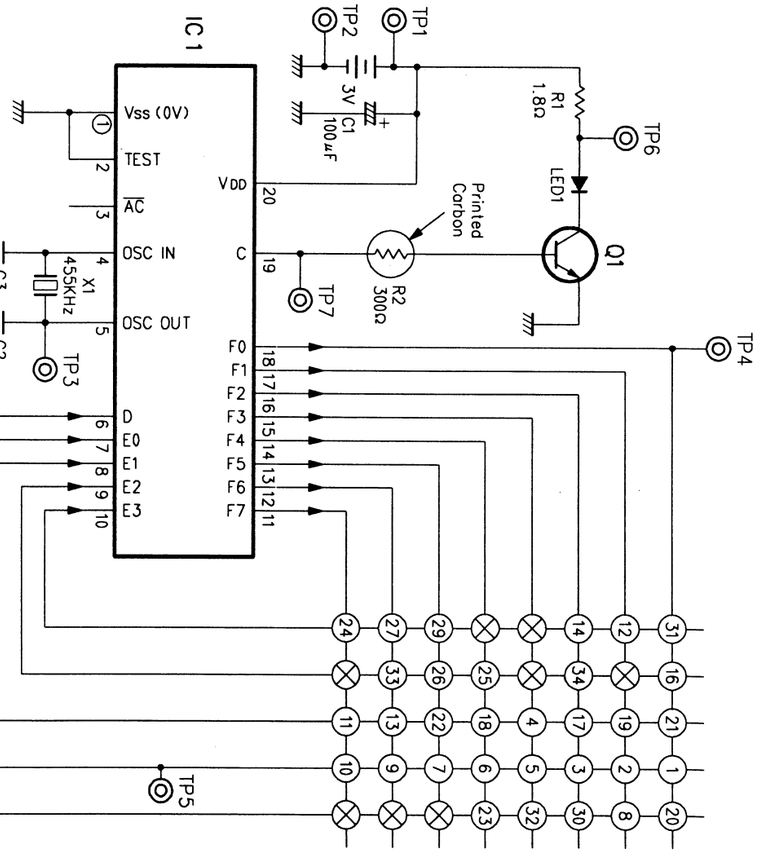
Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.



4.23 REMOTE CONTROL SCHEMATIC DIAGRAM

NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.

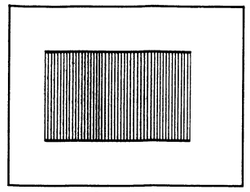
Key No.	KEY NAME
1	1
2	2
3	3
4	POWER
5	4
6	5
7	6
8	MENU
9	7
10	8
11	9
12	CH ▲
13	TIMER
14	O/AUX
15	—
16	CH ▼
17	REW
18	PLAY
19	FF
20	REC
21	STOP
22	PAUSE
23	TV/VIDEO
24	CANCEL/SKIP
25	SEARCH <<
26	SEARCH >>
27	TV
28	—
29	SP/EP
30	DISPLAY
31	A. MONITOR
32	SELECT
33	TV VOL ▼
34	TV VOL ▲
35	—
36	—
37	—
38	—
39	—
40	—



4.24 WAVEFORMS

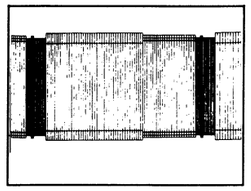
—VIDEO—

WF1 JP202-5 REC FM



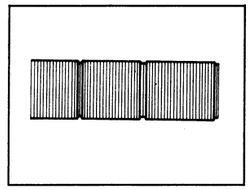
REC 0.7 Vp-p
20 mV/2 msec/DIV

WF2 JP202-6 PB FM



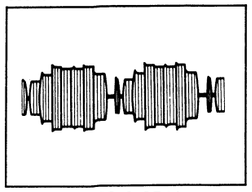
PAL PB 0.36 Vp-p
10 mV/5 msec/DIV

WF2 JP202-6 PB FM



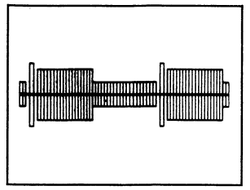
SECAM PB 0.35 Vp-p
10 mV/10 µsec/DIV

WF3 JP202-11 REC COLOR



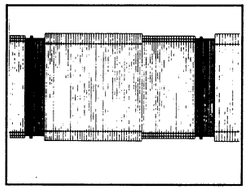
PAL REC 0.25 Vp-p
10 mV/10 µmsec/DIV

WF3 JP202-11 REC COLOR



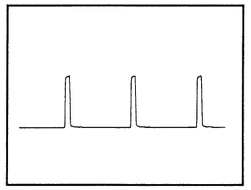
SECAM REC 0.2 Vp-p
10 mV/5 msec/DIV

WF4 JP202-12 PB FM/COLOR



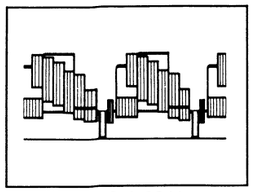
PB 0.5 Vp-p
20 mV/5 msec/DIV

WF5 JP212 C. SYNC



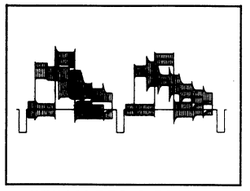
REC 4.5 Vp-p
0.2 V/20 µsec/DIV

WF6 JP203-6 AUX IN



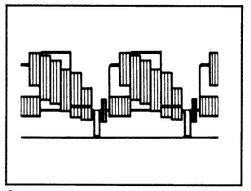
PAL REC 0.68 Vp-p
20 mV/20 µsec/DIV

WF6 JP203-6 AUX IN



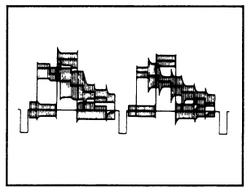
SECAM REC 0.56 Vp-p
20 mV/20 µsec/DIV

WF7 JP203-10



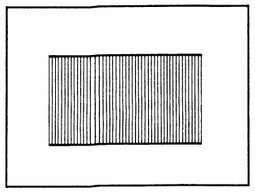
PAL REC/PB 2.3 Vp-p
0.1 V/20 µsec/DIV

WF7 JP203-10



SECAM REC/PB 2.2 Vp-p
0.1 V/20 µsec/DIV

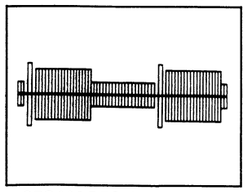
WF8 CN201-7 REC COLOR



PAL REC 0.18 Vp-p
5 mV/20 µsec/DIV

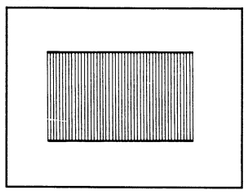
—AUDIO—

WF8 CN201-7 REC COLOR



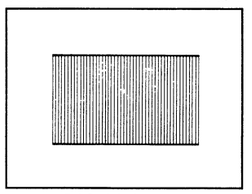
SECAM REC 0.15 mVp-p
5 mV/10 msec/DIV

WF1 CN3-4



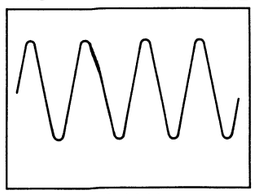
REC 45.0 Vp-p
1 V/1 msec/DIV

WF2 TP33 A. ERASE



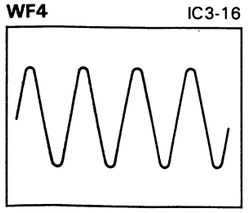
REC 36.0 Vp-p
1 V/1 msec/DIV

WF3 IC3-12



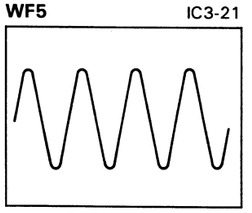
PB 0.11 Vp-p
5 mV/1 msec/DIV

WF4 IC3-16



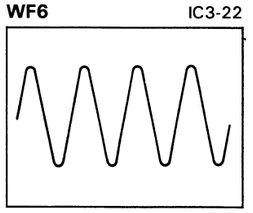
REC 0.26 Vp-p
10 mV/1 msec/DIV

WF5 IC3-21



REC 3.4 Vp-p
0.1 V/1 msec/DIV

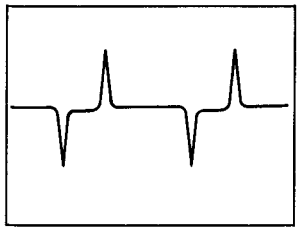
WF6 IC3-22



REC/PB 2.6 Vp-p
0.1 V/1 msec/DIV

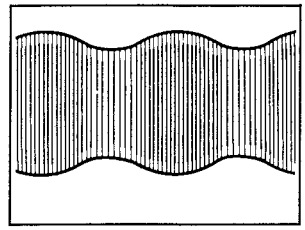
—SERVO—

WF1 TP401 CTL PULSE



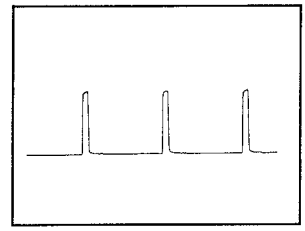
PB 2.8 Vp-p
0.1 V/5 msec/DIV

WF2 IC401-38 CAP. FG



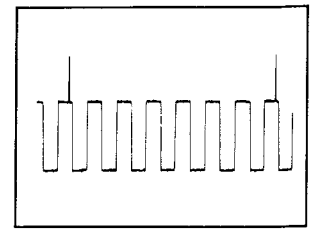
REC 1.8 Vp-p
0.1 V/10 msec/DIV

WF3 IC401-49 C. SYNC



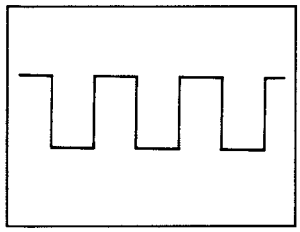
REC 4.4 Vp-p
0.2 V/20 μsec/DIV

WF4 IC401-8 D. PG/FG



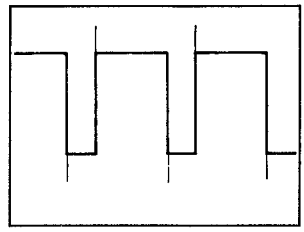
REC/PB 4.2 Vp-p
0.1 V/10 msec/DIV

WF5 TP411 D. FF



REC/PB 2.8 Vp-p
0.1 V/10 msec/DIV

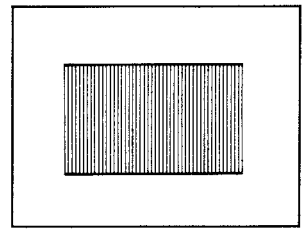
WF6 IC401-29



REC 6.0 Vp-p
0.2 V/10 msec/DIV

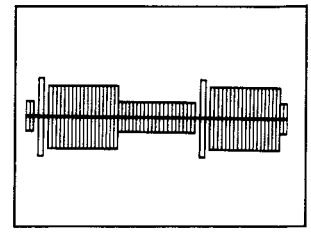
—PRE/REC—

WF1 CN501-7 REC COLOR



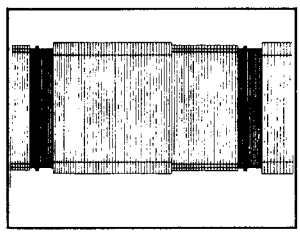
PAL REC 0.18 Vp-p
5 mV/20 μsec/DIV

WF1 CN501-7 REC COLOR



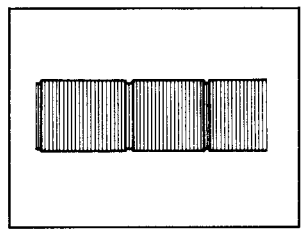
SECAM REC 0.15 mVp-p
5 mV/20 μsec/DIV

WF2 CN501-8 PB FM



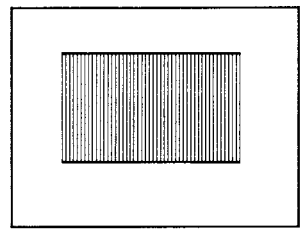
PAL PB 0.36 Vp-p
10 mV/5 msec/DIV

WF2 CN501-8 PB FM



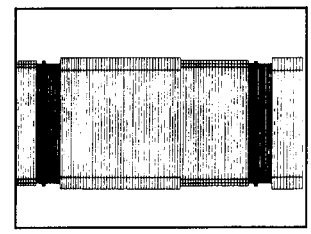
SECAM PB 0.35 Vp-p
10 mV/5 msec/DIV

WF3 CN501-9 REC FM



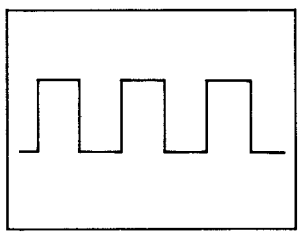
REC 0.7 Vp-p
20 mV/2 msec/DIV

WF4 TP506 PB FM



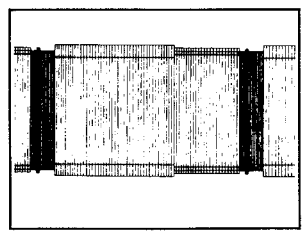
PB 0.54 Vp-p
20 mV/5 msec/DIV

WF5 TP511 D. FF



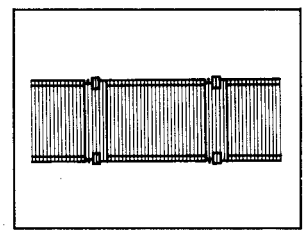
REC/PB 2.8 Vp-p
0.2 V/10 msec/DIV

WF6 IC501-34



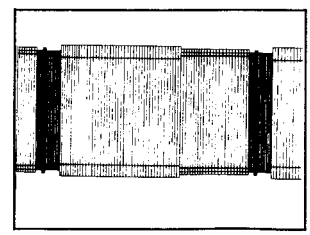
PAL REC 0.24 Vp-p
10 mV/5 msec/DIV

WF6 IC501-34



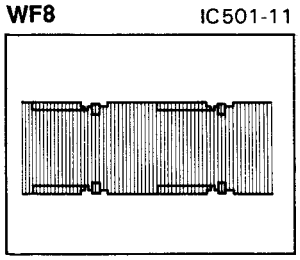
SECAM REC 0.22 Vp-p
10 mV/5 msec/DIV

WF7 IC501-28



PB 0.52 Vp-p
20 mV/5 msec/DIV

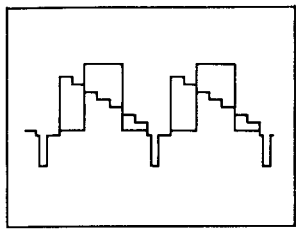
WF8 IC501-11



REC 2.2 Vp-p
0.1 V/10 msec/DIV

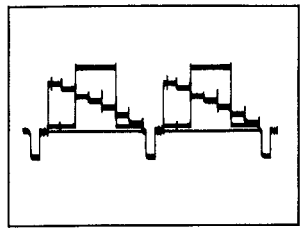
—VIDEO UNIT—

WF1 IC2-11



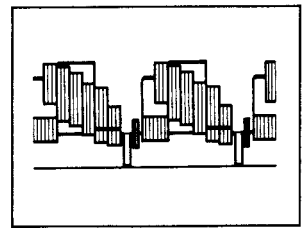
REC 0.52 Vp-p
20 mV/20 μsec/DIV

WF2 IC2-12



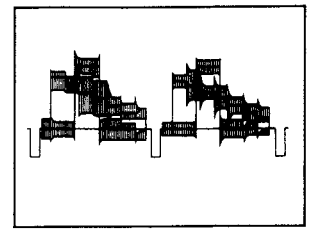
PB 0.13 Vp-p
5 mV/20 μsec/DIV

WF3 IC2-14



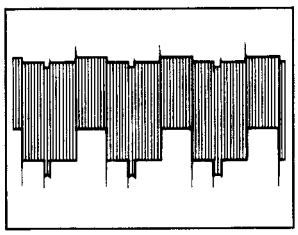
PAL REC 1.2 Vp-p
50 mV/20 μsec/DIV

WF3 IC2-14



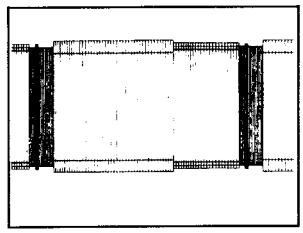
SECAM REC 1.2 Vp-p
50 mV/20 μsec/DIV

WF3 IC2-14



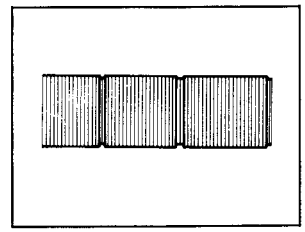
PB 1.1 Vp-p
20 mV/20 μsec/DIV

WF4 IC2-16



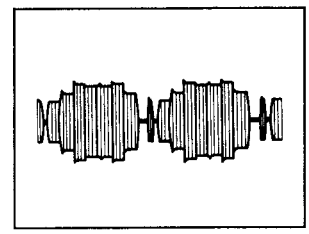
REC 1.4 Vp-p
50 mV/5 msec/DIV

WF5 IC2-19



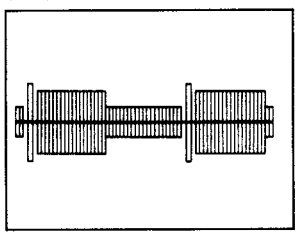
PAL PB 0.36 Vp-p
SECAM PB. 0.4 Vp-p
10 mV/5 msec/DIV

WF6 IC2-34



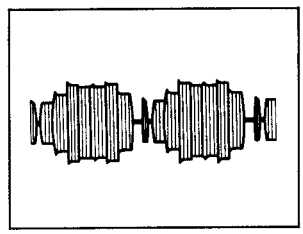
PAL REC 0.4 Vp-p
20 mV/20 μsec/DIV

WF6 IC2-34



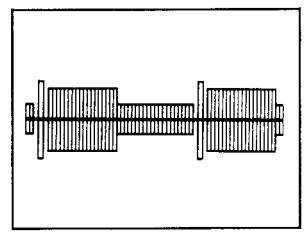
SECAM REC 0.4 Vp-p
20 mV/20 μsec/DIV

WF7 IC2-41



PAL PB 0.12 Vp-p
5 mV/20 μsec/DIV

WF7 IC2-41

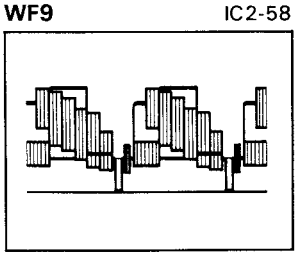


SECAM PB 0.1 Vp-p
5 mV/5 msec/DIV

WF8 IC2-42

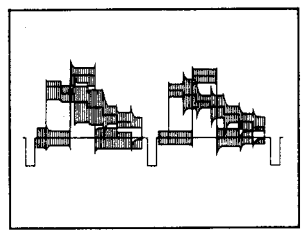
REC 0.03 Vp-p
5 mV/5 msec/DIV

WF9 IC2-58



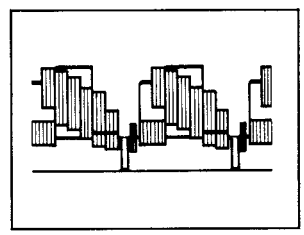
REC 0.72 Vp-p
20 mV/20 μsec/DIV

WF9 IC2-58



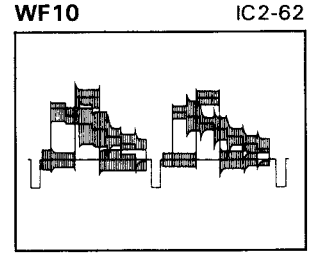
REC 0.6 Vp-p
20 mV/20 μsec/DIV

WF10 IC2-62



PAL REC/PB 2.4 Vp-p
0.1 V/20 μsec/DIV

WF10 IC2-62



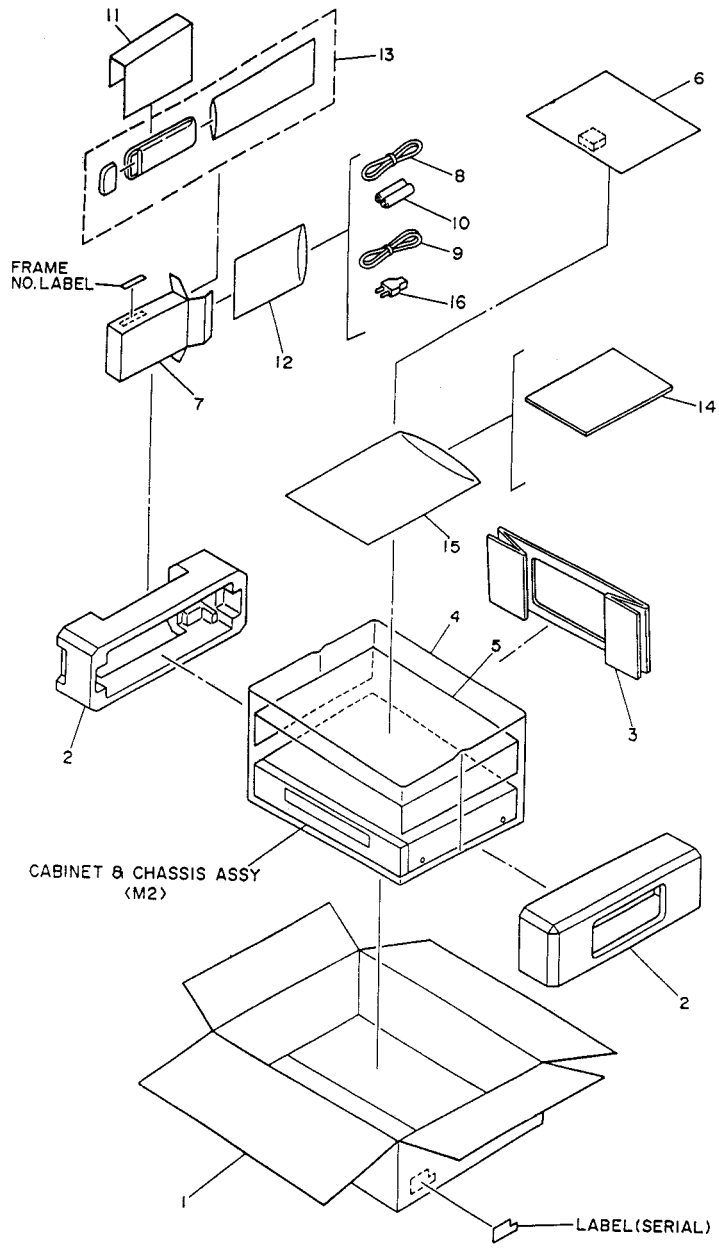
SECAM REC/PB 2.8 Vp-p
0.1 V/20 μsec/DIV

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

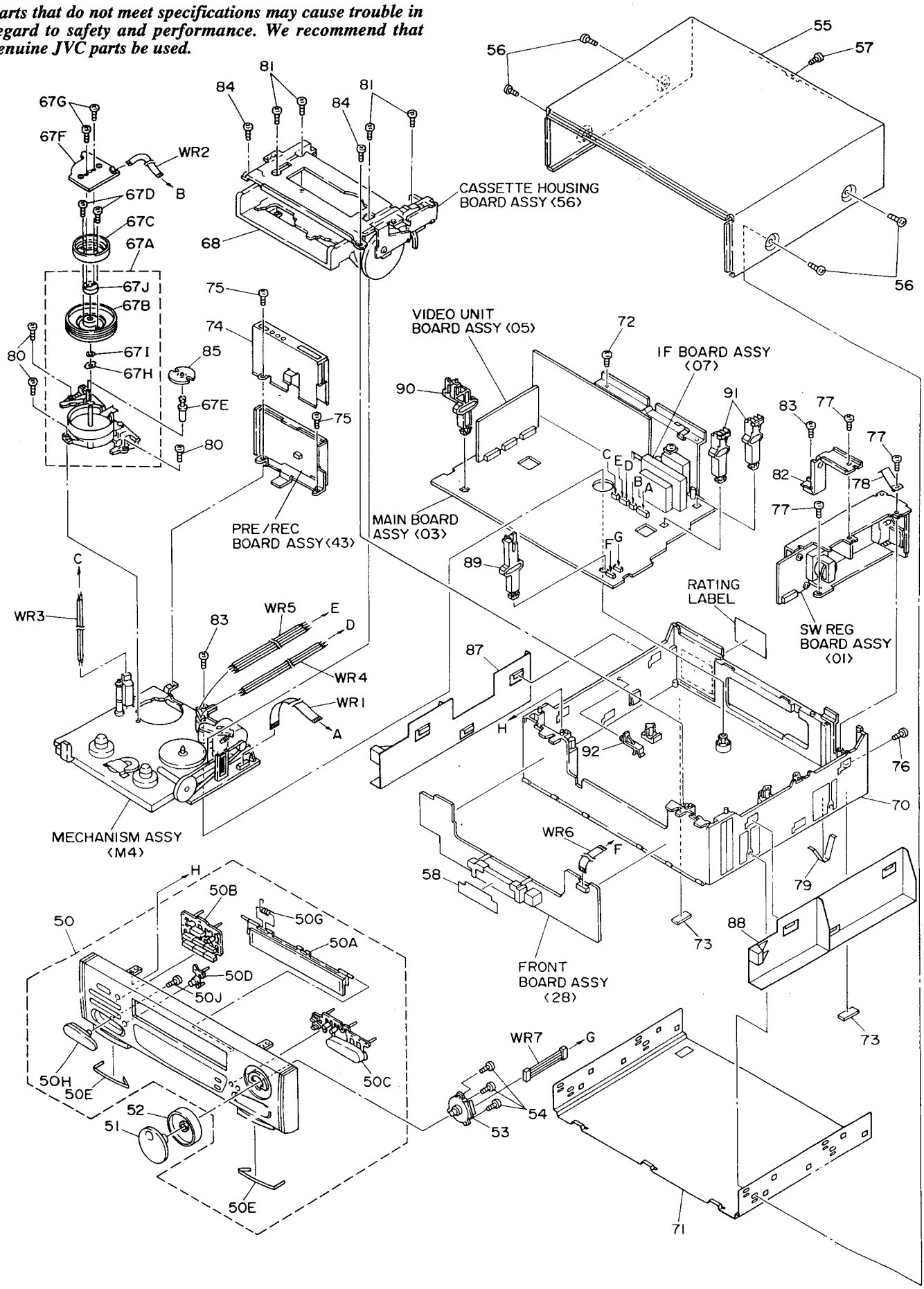
PACKING AND ACCESSORY ASSEMBLY <M1>

	1	PQ35120-3	PACKING CASE
	2	PQ35160A-1	CUSHION ASSY
	3	PQ35082-2	SPACER
	4	PQM30021-91	POLY BAG
	5	PQ41026-38	PROTECT SHEET
	6	PQ35190A-2	CUSHION ASSY
	7	PQ34715-3	CASE,ACCESSORY
⚠	8	QMP73F0-183	POWER CORD,J417MS
⚠		QMP40E0-183	POWER CORD,J417MS/A
	9	PEAC0348	RF CABLE(M),AERIAL CABLE
	10	R03BPA-2ST	BATTERY,X2
	11	PQ34834	SHEET
	12	QPGA020-02005	POLY BAG
⚠	13	PQ21674D-2	REMOTE CONTROLLER
⚠	14	PU30425-1540	INSTRUCTIONS
	15	QPGA025-03505	POLY BAG
⚠	16	PEMC1012	CONVERSION PLUG,J417MS

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



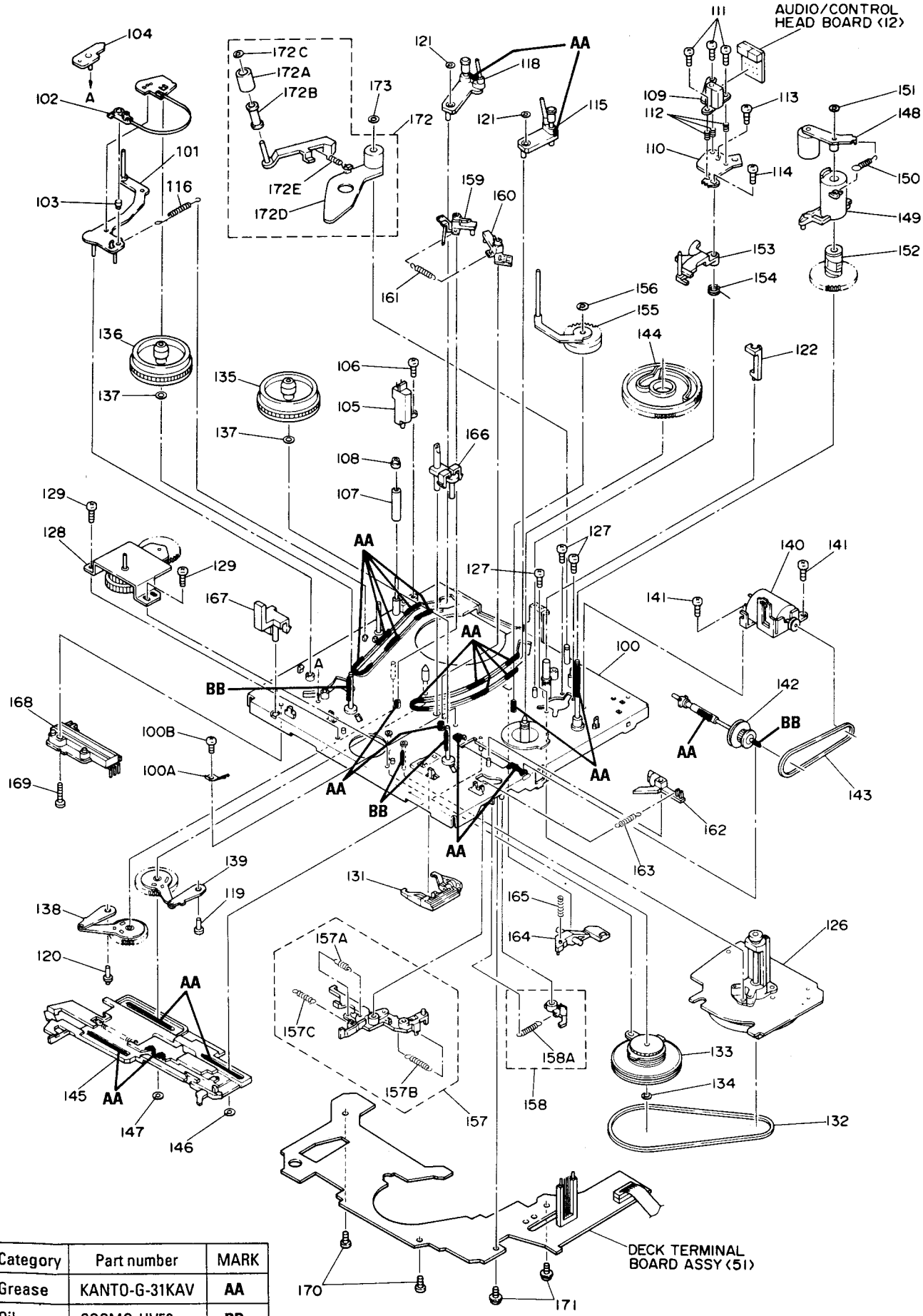
#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

****

CABINET AND CHASSIS ASSEMBLY <M2>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
⚠	50	PQ11618Q	FRONT PANEL ASSY
	50A	PQ21633-18	CASSETTE DOOR
	50B	PQ21637-6	BUTTON(1)
	50C	PQ21638-8	BUTTON(2)
	50D	PQ34915-2	BUTTON(3)
	50E	PQ46398-2	PLATE(FOOT),X2
	50G	PQ46414	TORSION SPRING
	50H	PQ35006-8	COVER(FRONT)
	50J	SDSF2608Z	SCREW
	51	PQ35133B	KNOB(JOG)ASSY
	52	PQ34917-2	KNOB(SHUTTLE)
	53	PEME0757-03	JOG SHUTTLE ASSY
	54	SDSF2608Z	SCREW,X3 JOG SHUTTLE
⚠	55	PQ11624-2-3	TOP COVER
	56	PQ43827	SPECIAL SCREW,X4 TOP COVER
	57	SDSF3010M	SCREW,TOP COVER
	58	PQ46283	FILTER(FDP)
	67A	PDM2232AF	DRUM SUB ASSEMBLY
	67B	PDM3353U	UPPER DRUM ASSEMBLY
	67C	PDZ0141-2	ROTOR ASSEMBLY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4311A-1	ROLLER ASSEMBLY
⚠	67F	PDZ0141-1-2	STATOR ASSEMBLY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4343A	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4345A	COLLAR ASSEMBLY
	68	PUS29672C-2	CASSETTE HOUSING ASSY
⚠	70	PQ11622-1-10	BOTTOM CHASSIS
⚠	71	PQ11625-2-1	BOTTOM COVER
	72	SDSF3010Z	SCREW,TERMINAL
	73	PQ43013-5	FOOT,X2
	74	PQ21513-1-1	SHIELD CASE,PRE/REC
	75	SDSG2606Z	SCREW,X2 PRE/REC
	76	SDSB3008M	SCREW,INLET
	77	SDSF3010Z	SCREW,X3 SW REG
	78	PQ46139	EARTH PLATE
	79	PQ34737	EARTH PLATE
	80	SPST2610Z	SCREW,X3 DRUM
	81	SDST2608Z	SCREW,X4 CASSETTE HOUSING
	82	PQ35010	BRACKET(M.DECK)
	83	PQ43831	SPECIAL SCREW,X2 MECHA
	84	SDSF3010Z	SCREW,X2 CASSETTE HOUSING
	85	PQ45160	INERTIA PLATE
	87	PQ21647	INNER PIECE(L)
	88	PQ21648	INNER PIECE(R)
	89	PEME0938-01-01	HOLDER (PWB)
	90	PEME0942	HOLDER (MAIN),CASS.HOUSING
	91	PEME0943-01-01	HOLDER (REG.),X2 TERMINAL BKT
	92	PQ34691	PWB HOLDER,VIDEO UNIT
	WR1	PW30802-1824	FFC WIRE,D.TERMINAL
	WR2	PW30803-0422	FFC,DRUM
	WR3	PW30701-36AAYY	WIRE,FF
	WR4	PW30702-12AAYY	WIRE,CTL
	WR5	PW30705-12AAYY	WIRE,AUDIO
	WR6	PW30802-0913	WIRE,FRONT
	WR7	PW30202-08415	WIRE,JOG SHUTTLE

5.3 MECHANISM ASSEMBLY <M4>



Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in **AA** and **BB** indicate lubrication and greasing areas.

MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
100	PQ20650K-33	MAIN DECK ASSEMBLY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW
101	PQ43497K	TENSION ARM ASSY
102	PQ45023A-1	TENSION BAND ASSY
103	PQ43503-1-4	ADJUST PIN
104	PQ44246	TENSION BAND BRACKET-3
105	PEHE0237	FULL ERASE HEAD
106	SDSF2614Z	SCREW,FULL ERASE HEAD
107	PQ43505-1-1	ROLLER
108	PQ43506	GUIDE POLE CAP
109	PEHE0182	AUDIO CONTROL HEAD
110	PQ43509	HEAD BASE
111	PQ43687A	SPECIAL SCREW,X3
112	PQM30002-192	COMPRESSION SPRING,X3
113	SPSF2608M	SCREW
114	SPSP2606Z	SCREW
115	PU61103-2-8	POLE BASE ASSY(TAKE-UP)
116	PQ43500	TENSION SPRING
118	PU61151-2-7	POLE BASE ASSY(SUPPLY)
119	PQ45895	STOPPER(T)
120	PQ45894	STOPPER(S)
121	PQM30017-41	SLIT WASHER,X2
122	PQ43675-1-5	TAPE GUARD
⚠ 126	PU61285	CAPSTAN MOTOR
127	SPSG2608Z	SCREW,X3
128	PU60618-1-3	IDLER GEAR UNIT
129	SPST2606Z	SCREW,X2
131	PQ43532B-4	CHANGE LEVER ASSEMBLY
132	PQM30003-24	TIMER BELT
133	PU60953-1-6	CLUTCH UNIT
134	PQM30017-8	SLIT WASHER
135	PQ46072A	REEL DISK ASSY,(TAKE-UP)
136	PU60859-1-4	REEL DISK (SUPPLY)
137	PQM30018-54	SPACER,X2
138	PQ43537B	LOADING ARM ASSY (SUPLLY)
139	PQ43542D-4	LOADING ARM ASSY(TAKE-UP)
⚠ 140	PQ43676B-5	LOADING MOTOR ASSY
141	SPST2606Z	SCREW,X2
142	PQ43548A-2	WORM CLUTCH ASSY
143	PQM30003-23	BELT
144	PQ32413-1-6	CONTROL CAM
145	PQ43555C-10	PLATE ASSY
146	PQM30017-12	SLIT WASHER
147	PQM30017-8	SLIT WASHER
148	PQ43523C	PINCH ROLLER LEVER ASSY
149	PQ32415	PINCH ROLLER PRESS LEVER
150	PQM30001-233	TENSION SPRING
151	PQM30017-12	SLIT WASHER
152	PQ32416-2	PINCH ROLLER CAM
153	PQ43567A-13	GUIDE ARM ASSY
154	PQ43569-1-3	TORSION SPRING
155	PQ45073B	HALF LOADING GEAR ASSY
156	PQM30017-13	SLIT WASHER
157	PQ43575A-7	CANCELL LEVER ASSY
157A	PQM30001-273	TENSION SPRING
157B	PQM30001-237	TENSION SPRING
157C	PQM30001-274	TENSION SPRING
158	PQ43578A-2	HOOK ASSY
158A	PQM30001-238	TENSION SPRING
159	PQ43581D	MAIN BRAKE ASSY(SUPPLY)
160	PQ43582C	MAIN BRAKE ASSY(TAKE UP)
161	PQM30001-251	TENSION SPRING
162	PQ43583A-3	SUB BRAKE ASSY (TAKE UP)
163	PQM30001-235	TENSION SPRING
164	PQ43584A-5	CAPSTAN BRAKE ASSY
165	PQM30002-201	COMPRESSION SPRING
166	PQ21546	LED PRISM
167	PU61281	REC SAFETY SWITCH
168	PU60622-1-2	SLIDE SWITCH
169	SDSF2614Z	SCREW
170	SDST2616Z	SCREW,X2
171	GPSF2608Z	SCREW,X2
172	PQ46016B-4	CLEANER ASSY
172A	PQ46019	CLEANER
172B	PQ46018	CLEANER ROLLER
172C	PQM30017-38	SLIT WASHER
172D	PQ34677-1-3	CLEANER LEVER
172E	PQ46155-1-2	TORSION SPRING
173	PQM30017-32	SLIT WASHER

5.4 ELECTRICAL PARTS LIST

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
**********			

SWITCHING REGULATOR BOARD ASSY <01>

PWBA	PB20651D-02	SW.REG BOARD ASSY	
Q1	2SK2043-CB14	FE TRANSISTOR	
Q2	2SC3616(ML)	TRANSISTOR	
Q31	2SC1740S(RS)	TRANSISTOR	
D1	10E6-F2	DIODE	
D2	10E6-F2	DIODE	
D3	10E6-F2	DIODE	
D4	10E6-F2	DIODE	
D6	1SS133	DIODE	
	or MA165	DIODE	
D7	UZ27BSB	ZENER DIODE	
	or RD27ES-T1B2	ZENER DIODE	
	or MTZ27BT-77	ZENER DIODE	
D8	1SS133	DIODE	
	or MA165	DIODE	
D9	AU01	FR DIODE	
	or ERA18-04-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
D10	AU01	FR DIODE	
	or ERA18-04-T2	FR DIODE	
	or 1SR153-400-T2	FR DIODE	
D11	RD6.2ES-T1B1	ZENER DIODE	
	or UZ6.2BSA	ZENER DIODE	
	or MTZV6.2A	ZENER DIODE	
D31	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D32	RL2Z-LFB2	FR DIODE	
D33	RL2Z-LFB2	FR DIODE	
D35	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D36	RK14LF-B2	SB DIODE	
	or 21DQ04	SB DIODE	
D37	AU01Z	FR DIODE	
	or ERA18-02-T2	FR DIODE	
	or 1SR153-200-T2	FR DIODE	
	or 10ELS2	FR DIODE	
D38	1SS133	DIODE	
	or MA165	DIODE	
D40	RD15ES-T1B1	ZENER DIODE	
	or UZ15BSA	ZENER DIODE	
D41	RD6.2ES-T1B3	ZENER DIODE	
	or UZ6.2BSC	ZENER DIODE	
	or MTZV6.2C	ZENER DIODE	
D42	RD30ES-T1B1	ZENER DIODE	
	or MTZ30AT-77	ZENER DIODE	
	or UZ30BSA	ZENER DIODE	
D43	1SS133	DIODE	
	or MA165	DIODE	
R4	QRD161J-334	RESISTOR	330kΩ,1/6W
R5	QRD161J-334	RESISTOR	330kΩ,1/6W
R6	QRD161J-102	RESISTOR	1kΩ,1/6W
R7	QRD161J-563	RESISTOR	56kΩ,1/6W
R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
R9	QRG029J-683G	OMF RESISTOR	68kΩ,2W
R10	QRG029J-331A	OMF RESISTOR	330Ω,2W
R11	QRD161J-152	RESISTOR	1.5kΩ,1/6W
R13	QRD161J-102	RESISTOR	1kΩ,1/6W
R14	QRD161J-332	RESISTOR	3.3kΩ,1/6W
R15	QRD161J-683	RESISTOR	68kΩ,1/6W
R31	QRG01DJ-110X	MF RESISTOR	11Ω,1W
⚠ R32	QRZ0077-470X	FUSIBLE RESISTOR	47Ω,1/4W
⚠ R33	QRG02DJ-222X	OMF RESISTOR	2.2kΩ,2W
R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
R35	QRD161J-471	RESISTOR	470Ω,1/6W
R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
R37	QRD161J-122	RESISTOR	1.2kΩ,1/6W
⚠ C2	QFZ9022-683	F CAPACITOR	0.068μF
⚠ C3	QFZ9022-333	F CAPACITOR	0.033μF
⚠ C6	QCZ9016-222M	CAPACITOR	0.0022μF
⚠ C8	QCZ9016-222M	CAPACITOR	0.0022μF
⚠ C9	QCZ9026-222	CAPACITOR	0.0022μF
C10	PECA0793-686	E CAPACITOR	68μF,400V
C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
C13	QCZ0212-472	CAPACITOR	0.0047μF,1kV
C16	QFLA1HJ-562Z	F CAPACITOR	0.0056μF,50V
C19	QCBB1HJ-331	CAPACITOR	330pF,50V
C21	QFV11HJ-104AZ	F CAPACITOR	0.1μF,50V
C31	QETC1JM-226	E CAPACITOR	22μF,63V
C32	QEM91CM-687	E CAPACITOR	680μF,16V
C33	QEMM1AM-687	E CAPACITOR	680μF,10V
C34	QETC1HM-226	E CAPACITOR	22μF,50V
C35	QEM91AM-107	E CAPACITOR	100μF,10V
C36	QETB1AM-477	E CAPACITOR	470μF,10V
C37	QETB1EM-227	E CAPACITOR	220μF,25V
C38	QETC1HM-474	E CAPACITOR	0.47μF,50V
C39	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50V
C40	QEGB1EM-227	E CAPACITOR	220μF,25V
C42	QETB1CM-477	E CAPACITOR	470μF,16V
L31	PELN0687	COIL	
L32	PELN0687	COIL	
L33	PELN0687	COIL	
⚠ PC1	PS2561L-1(WL)	PH COUPLER	
⚠ T1	PELN0987-02	SW TRANS	
⚠ AO1	PEMC1067	AC INLET	
⚠ BKT1	PQ21649-1-6	TRANS BRACKET	
⚠ FC1	PEMC0965-Z	FUSE CLIP	
⚠ FC2	PEMC0965-Z	FUSE CLIP	
⚠ HS1	PQ45788-1-1	HEAT SINK,Q1	
⚠ LF2	PU59707	LINE FILTER	
SCW1	SDST3006Z	SCREW,X3	
SCW2	SDSB3008M	SCREW	
SCW3	SDST3006Z	SCREW	
⚠ SLD1	PQ35100-1-1	SHIELD COVER	
CN1	PEMC0978-111	CONNECTOR,(1-11) MAIN	
⚠ CP1	ICP-N20	CIRCUIT PROTECTOR	
⚠ F1	QMF51E2-1R25	FUSE	T1.2A

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MAIN BOARD ASSEMBLY <03>

PWBA	PB10871C	MAIN BOARD ASSY
ETH1	PQ46115	EARTH PLATE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
ETH2	PQ46090	EARTH PLATE	
SCW1	SDST2605Z	SCREW	
SCW2	SDSF3008Z	SCREW,X2	
SPC1	PQM30029-219	SPACER	
TB1	PQ21718L	TERMINAL BOARD ASSY	
CN3	PU60910-7	CONNECTOR,(1-7) A/C HEAD	
CN4	PU60910-2	CONNECTOR,(1-2) FE HEAD	
CN201	PEMC1055-018	CONNECTOR,(2-19) PRE/REC	
CN402	PEMC1101-004	CONNECTOR,(1-4) DRUM	
CN601	PEMC0915-018	CONNECTOR,(1-18) D.TERMINAL	
CN602	PU59555-8	CONNECTOR,(1-8)JOG SHUTTLE	
CN801	PEMC0975-011	CONNECTOR,(1-11) SW REG	
CN802	PEMC0915-009	CONNECTOR,(1-9) FRONT	

- TUNER SECTION -

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
⚠ RF1	PERF0152	RF CONVERTER	
⚠ TNR1	PERF0151	TUNER	
IC901	AN1358	IC	
	or AN6562-SG	IC	
	or M5223P	IC	
	or TA75358P	IC	
IC902	M50253P	IC	
	or BU2090	IC	
Q901	2SC4081(RS)	TRANSISTOR	
Q902	DTA123YU	TRANSISTOR	
Q903	DTA123YU	TRANSISTOR	
Q904	DTA123YU	TRANSISTOR	
Q905	2SB810H,J	TRANSISTOR	
Q906	2SD1450S,T	TRANSISTOR	
	or 2SD1468S(RS)	TRANSISTOR	
Q911	DTC143EU	TRANSISTOR	
D901	HZT31	ZENER DIODE	
R901	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R902	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R903	QRSA08J-221YN	RESISTOR	220Ω,1/10W
R904	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R905	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R906	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R907	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R908	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R909	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R917	QRD161J-182	RESISTOR	1.8kΩ,1/6W
R918	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R919	QRSA08J-331YN	RESISTOR	330Ω,1/10W
R920	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
R921	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R922	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R931	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R961	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R962	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R963	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R964	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
C901	QCYA1HK-103	CAPACITOR	0.01μF,50V
C902	QFLC1HJ-333Z	F CAPACITOR	0.033μF,50V
C903	QFLC1HJ-153Z	F CAPACITOR	0.015μF,50V
C904	QETF1HM-106	E CAPACITOR	10μF,50V
C906	QETF1HM-106	E CAPACITOR	10μF,50V
C907	QETF1CM-476	E CAPACITOR	47μF,16V
C908	QCYA1HK-103	CAPACITOR	0.01μF,50V
C909	QETF1CM-476	E CAPACITOR	47μF,16V
C910	QEKF1HM-225	E CAPACITOR	2.2μF,50V
C912	QEKF1HM-224	E CAPACITOR	0.22μF,50V
C931	QCYA1HK-103	CAPACITOR	0.01μF,50V
WR1	PW30402-BB10M	COAXIAL ASSY	

- VIDEO SECTION -

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC201	BA7106LS	IC	
	or XRA7106LS	IC	
IC202	MM1113XF	IC	
IC203	BA7045	IC	
IC204	M50253P	IC	
	or BU2090	IC	
Q201	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q202	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
Q203	2SC4081(RS)	TRANSISTOR	
Q205	2SC4081(RS)	TRANSISTOR	
Q206	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q207	2SA933S(RS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	
Q208	2SC1740S(RS)	TRANSISTOR	
	or 2SC3199(GB)-TJK	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
	or 2SC536SPA(FG)	TRANSISTOR	
Q209	DTA144WU	TRANSISTOR	
Q210	2SC4081(RS)	TRANSISTOR	
Q211	DTA144WS	TRANSISTOR	
D201	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D205	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
R201	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R202	QRD161J-562	RESISTOR	5.6kΩ,1/6W
R203	QRD161J-363	RESISTOR	36kΩ,1/6W
R204	QRD161J-363	RESISTOR	36kΩ,1/6W
R205	QRD161J-103	RESISTOR	10kΩ,1/6W
R206	QRSA08J-914YN	RESISTOR	910kΩ,1/10W
R207	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R208	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R209	QRD161J-104	RESISTOR	100kΩ,1/6W
R210	QRD161J-333	RESISTOR	33kΩ,1/6W
R211	QRD161J-273	RESISTOR	27kΩ,1/6W
R212	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R213	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R214	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R215	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R216	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R217	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R218	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R219	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R221	QRSA08J-511YN	RESISTOR	510Ω,1/10W
R222	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R223	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R226	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R229	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
R230	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R231	QRSA08J-753YN	RESISTOR	75kΩ,1/10W
R232	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R233	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R234	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R236	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R237	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R238	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R239	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R240	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R241	QRD121J-391S	RESISTOR	390Ω,1/2W
R242	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R243	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R244	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R245	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R246	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R247	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R248	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R249	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R250	QRSA08J-302YN	RESISTOR	3kΩ,1/10W
R251	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R253	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R254	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R256	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
C201	QETF1CM-106	E CAPACITOR	10μF,16V
C202	QETF1HM-335	E CAPACITOR	3.3μF,50V
C203	QCSA1HJ-471	CAPACITOR	470pF,50V
C204	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C205	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C206	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C207	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C208	QFN31HJ-471	F CAPACITOR	470pF,50V
C209	QCSA1HJ-270	CAPACITOR	27pF,50V
C210	QCYA1HK-472	CAPACITOR	0.0047μF,50V
C211	QCT25CH-101	CAPACITOR	100pF
C212	QCSA1HJ-5R0	CAPACITOR	5pF,50V
C213	QETF0JM-476	E CAPACITOR	47μF,6.3V
C214	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C217	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C218	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C219	QCSA1HJ-300	CAPACITOR	30pF,50V
C220	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C221	QCSA1HJ-330	CAPACITOR	33pF,50V
C222	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C223	QCSA1HJ-4R0	CAPACITOR	4pF,50V
C224	QCSA1HJ-270	CAPACITOR	27pF,50V
C225	QCTA1CH-200	CAPACITOR	20pF,16V
C226	QCVB1CN-103	CAPACITOR	0.01μF,16V
C227	QEK61HM-105	E CAPACITOR	1μF,50V
C228	QCYA1HK-272	CAPACITOR	0.0027μF,50V
C229	QCTA2CH-240	CAPACITOR	24pF,160V
C230	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C231	QCTA2CH-200	CAPACITOR	20pF,160V
C232	QCTA2CH-200	CAPACITOR	20pF,160V
C234	QCYA1HK-471	CAPACITOR	470pF,50V
C235	QCFA1HZ-223	CAPACITOR	0.022μF,50V
C238	QETC1CM-476	E CAPACITOR	47μF,16V
C239	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C240	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C241	QETF0JM-476	E CAPACITOR	47μF,6.3V
C242	QETF1EM-475	E CAPACITOR	4.7μF,25V
C244	QCC11CJ-104	CAPACITOR	0.1μF,16V
C245	QCVB1CN-103	CAPACITOR	0.01μF,16V
C249	QCYA1EK-104	CAPACITOR	0.1μF,25V
L201	PU48530-101K	COIL	100μH
L202	PU60655-2	COIL	
L203	PU59152-150J	COIL	15μH
L204	PU59152-680J	COIL	68μH
L205	PU59152-270J	COIL	27μH
L206	PU59152-100J	COIL	10μH
L207	PU59152-390J	COIL	39μH
L208	PU48530-101K	COIL	100μH
EQ201	PELN0742	EQUALIZER	
DL201	PU60496	DELAY LINE	
DL202	PEVB0515	COMB FILTER	

– SERVO SECTION –

IC401	JCP0039	IC	
	or JCP0039-2	IC	
	or HD49780ANT	IC	
	or HD49780NT	IC	
IC441	MM1111XF	IC	
Q441	2SC4081(R)	TRANSISTOR	
D401	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D402	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D403	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
R401	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R402	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R404	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R405	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
R406	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R407	QRD161J-102	RESISTOR	1kΩ,1/6W
R408	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R409	QRD161J-102	RESISTOR	1kΩ,1/6W
R410	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
R412	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R413	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R414	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R415	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R416	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R417	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R419	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R421	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R424	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R429	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R430	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
R431	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R432	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
R436	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R437	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R438	QRD161J-104	RESISTOR	100kΩ,1/6W
R440	QRSA08J-561YN	RESISTOR	560Ω,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R441	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R442	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R443	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C402	QEKF1AM-226	E CAPACITOR	22μF,10V
	C403	QEKF1AM-226	E CAPACITOR	22μF,10V
	C404	QCSA1HJ-101	CAPACITOR	100pF,50V
	C405	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C407	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C408	QCYA1EK-563	CAPACITOR	0.056μF,25V
	C409	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C410	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C412	QEKF1CM-106	E CAPACITOR	10μF,16V
	C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
	C414	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C415	QEKF1EM-475	E CAPACITOR	4.7μF,25V
	C416	QEKF1EM-475	E CAPACITOR	4.7μF,25V
	C417	QEKF1CM-106	E CAPACITOR	10μF,16V
	C418	QEKF1CM-106	E CAPACITOR	10μF,16V
	C419	QCC31CK-223	CAPACITOR	0.022μF,16V
	C420	QFV11HJ-334	F CAPACITOR	0.33μF,50V
	C421	QCSA1HJ-471	CAPACITOR	470pF,50V
	C441	QEKF1AM-226	E CAPACITOR	22μF,10V
	C442	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C443	QCSA1HJ-220	CAPACITOR	22pF,50V
	C444	QCSA1HJ-470	CAPACITOR	47pF,50V
	C445	QCSA1HJ-390	CAPACITOR	39pF,50V
	C446	QCSA1HJ-101	CAPACITOR	100pF,50V
	C448	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C449	QCSA1HJ-101	CAPACITOR	100pF,50V
	L441	PU48530-101K	COIL	100μH
⚠	X441	PEVB0475	CRYSTAL RESONATOR	
⚠	CP401	ICP-N15	CIRCUIT PROTECTOR	

– AUDIO SECTION –

	IC3	XRA7795LS	IC
		or BA7795LS	IC
	Q1	DTC144WU	TRANSISTOR
	Q2	2SC4081(QR)	TRANSISTOR
	Q3	2SA933S(QR)	TRANSISTOR
	Q4	2SA933S(QR)	TRANSISTOR
	D1	DAN202U	DIODE
	R17	QRSA08J-103YN	RESISTOR 10kΩ,1/10W
	R18	QRSA08J-123YN	RESISTOR 12kΩ,1/10W
	R21	QRSA08J-123YN	RESISTOR 12kΩ,1/10W
	R22	QRSA08J-562YN	RESISTOR 5.6kΩ,1/10W
	R23	QRSA08J-122YN	RESISTOR 1.2kΩ,1/10W
	R24	QRSA08J-221YN	RESISTOR 220Ω,1/10W
	R25	QRSA08J-393YN	RESISTOR 39kΩ,1/10W
	R26	QRSA08J-681YN	RESISTOR 680Ω,1/10W
	R27	QRSA08J-153YN	RESISTOR 15kΩ,1/10W
	R28	QRSA08J-0R0Y	RESISTOR 0Ω,1/10W
	R29	QRSA08J-221YN	RESISTOR 220Ω,1/10W
	R30	QRSA08J-331YN	RESISTOR 330Ω,1/10W
	R32	QRSA08J-223YN	RESISTOR 22kΩ,1/10W
	R33	QRSA08J-820YN	RESISTOR 82Ω,1/10W
	R34	QRSA08J-274YN	RESISTOR 270kΩ,1/10W
	R35	QRSA08J-822YN	RESISTOR 8.2kΩ,1/10W
	R36	QRSA08J-682YN	RESISTOR 6.8kΩ,1/10W
	R37	QRSA08J-472YN	RESISTOR 4.7kΩ,1/10W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R38	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R39	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
	R40	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R41	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R42	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R43	QRD161J-153	RESISTOR	15kΩ,1/6W
	R46	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R49	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R55	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R56	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R57	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R58	QRSA08J-820YN	RESISTOR	82Ω,1/10W
	R59	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R60	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
	R61	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R62	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R63	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R64	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R65	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R67	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R68	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	C7	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C8	QETF1CM-476	E CAPACITOR	47μF,16V
	C9	QETF1CM-106	E CAPACITOR	10μF,16V
	C10	QCC11EJ-562	CAPACITOR	0.0056μF,25V
	C11	QETF1HM-105	E CAPACITOR	1μF,50V
	C12	QCC11EJ-822	CAPACITOR	0.0082μF,25V
	C13	QCC11EJ-223	CAPACITOR	0.022μF,25V
	C14	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C15	QCYA1HK-681	CAPACITOR	680pF,50V
	C16	QETF1AM-336	E CAPACITOR	33μF,10V
	C17	QCYA1HK-123	CAPACITOR	0.012μF,50V
	C19	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C20	QETF1AM-226	E CAPACITOR	22μF,10V
	C21	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C22	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C23	QETF1CM-106	E CAPACITOR	10μF,16V
	C34	QCYA1HK-331	CAPACITOR	330pF,50V
	C35	QFV21HJ-823	F CAPACITOR	0.082μF,50V
	C36	QETF1CM-106	E CAPACITOR	10μF,16V
	C37	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C38	QCYA1HK-223	CAPACITOR	0.022μF,50V
	L1	PU58308-123J	COIL	12mH
⚠	T1	PELN0832	OSC TRANSFORMER	

– SYSTEM CONTROL SECTION –

	IC601	HD6433926B12F	QFP IC (MPU)
	IC602	AT93C56-10PC	IC
		or XLJ93LC56A	IC
		or 93C56/P	IC
		or 93LC56/P	IC
		or 93LC56B/P	IC
	IC603	MM1255XF	IC
	Q601	DTC124EU	TRANSISTOR
	Q602	DTC124EU	TRANSISTOR
	Q603	DTC124EU	TRANSISTOR
	Q604	DTC124EU	TRANSISTOR
	Q605	DTC143EU	TRANSISTOR
	Q610	DTC114TU	TRANSISTOR
	Q611	2SB1256	TRANSISTOR
	Q612	DTC143EU	TRANSISTOR

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D601	11ES2	DIODE	
D602	11ES2	DIODE	
D605	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D606	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D607	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D610	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D611	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D612	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D670	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D671	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D672	11ES2	DIODE	
D673	11ES2	DIODE	
R601	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R602	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R603	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R604	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R605	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R606	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R607	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R608	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R609	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R610	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R611	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R612	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R613	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R614	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R615	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R616	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R617	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R618	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R619	QRD161J-102	RESISTOR	1kΩ,1/6W
R620	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R621	QRD161J-102	RESISTOR	1kΩ,1/6W
R622	QRD161J-102	RESISTOR	1kΩ,1/6W
R623	QRD161J-332	RESISTOR	3.3kΩ,1/6W
R624	QRD161J-332	RESISTOR	3.3kΩ,1/6W
R625	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R626	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R627	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R628	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R629	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R630	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R631	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R632	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R633	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R634	QRSA08J-102YN	RESISTOR	1kΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R635	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R636	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R637	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R638	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R639	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R640	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R641	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R642	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R643	QRD161J-681	RESISTOR	680Ω,1/6W
R644	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R645	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R646	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R647	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R648	QRD161J-102	RESISTOR	1kΩ,1/6W
R649	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R650	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R651	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R652	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R653	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R654	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R655	QRD161J-103	RESISTOR	10kΩ,1/6W
R656	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R658	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R659	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R660	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R661	QRD161J-103	RESISTOR	10kΩ,1/6W
R662	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R663	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R664	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R665	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R666	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
R667	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R668	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R669	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R670	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R671	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R672	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R673	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R674	QRD161J-473	RESISTOR	47kΩ,1/6W
R675	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R676	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R677	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R678	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R679	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R680	QRSA08J-471YN	RESISTOR	470Ω,1/10W
C610	QETN0JM-228ZS	E CAPACITOR	2200μF,6.3V
C611	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C612	QEKF0JM-107	E CAPACITOR	100μF,6.3V
C613	QCSA1HJ-180	CAPACITOR	18pF,50V
C614	QAT3120-450	T CAPACITOR,TIMER CLOCK	45pF
C615	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C616	QEKF1CM-106	E CAPACITOR	10μF,16V
C619	QCC11EK-104	CAPACITOR	0.1μF,25V
C620	QCYA1EK-104	CAPACITOR	0.1μF,25V
C621	QEKF1CM-106	E CAPACITOR	10μF,16V
C622	QEKF1CM-106	E CAPACITOR	10μF,16V
C626	QCFA1HZ-103	CAPACITOR	0.01μF,50V
L601	PELN0530-101JW	COIL	100μH
⚠ CF601	PEVB0497	RESONATOR	
⚠ X601	PEVB0422	CRYSTAL RESONATOR	
⚠ TH601	PESC1041	POSI THERMISTOR	
⚠ CP601	ICP-N25	CIRCUIT PROTECTOR	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
⚠ CP602	ICP-N20	CIRCUIT PROTECTOR	

– REGURATOR SECTION –

Q801	2SC3616(MLK)	TRANSISTOR	
Q802	2SD2166	TRANSISTOR	
Q803	2SC1740S	TRANSISTOR	
	or 2SC2785(J-E)-T	TRANSISTOR	
Q804	DTA114ES	TRANSISTOR	
Q805	2SD1450S,T	TRANSISTOR	
D802	RD5.1JSB2	DIODE	
D803	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D804	HZ15CP	ZENER DIODE	
R801	QRD161J-471	RESISTOR	470Ω,1/6W
R802	QRD161J-473	RESISTOR	47kΩ,1/6W
R803	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R804	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R805	QVPA606-471Z	V RESISTOR,SWD 5V	
R806	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R808	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R811	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R812	QRD161J-511	RESISTOR	510Ω,1/6W
R813	QRD161J-471	RESISTOR	470Ω,1/6W
R815	QRG02DJ-102X	OMF RESISTOR	1kΩ,2W
C801	QETF0JM-107	E CAPACITOR	100μF,6.3V
C802	QETC1CM-106	E CAPACITOR	10μF,16V
C803	QETC1CM-107	E CAPACITOR	100μF,16V
C804	QETC0JM-226	E CAPACITOR	22μF,6.3V
C805	QETC0JM-107	E CAPACITOR	100μF,6.3V
C806	QFLA1HJ-102Z	F CAPACITOR	0.001μF,50V
⚠ CP801	ICP-N20	CIRCUIT PROTECTOR	

– TERMINAL SECTION –

Q702	2SB810H,J	TRANSISTOR	
D701	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D702	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D705	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
R701	QRSA08J-750YN	RESISTOR	75Ω,1/10W
R703	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
R704	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R770	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
C703	QETF1CM-476	E CAPACITOR	47μF,16V
L701	PU59152-100J	COIL	10μH
L702	PU48530-101J	COIL	100μH
J702	PU60612	MINI JACK, R PAUSE	
J703	PEMC0760-04	PIN JACK, VIDEO I/O	
J704	PEMC1027-02	PIN JACK, AUDIO(L) I/O	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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VIDEO UNIT BOARD ASSEMBLY <05>

PWBA1	PB10761C-06	VIDEO UNIT BOARD ASSEMBLY	
IC1	TL8839P	IC	
IC2	JCP0035-2	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SA1576(QRS)	TRANSISTOR	
Q4	2SC4081(QRS)	TRANSISTOR	
Q5	2SC4081(QRS)	TRANSISTOR	
Q6	2SC4081(QRS)	TRANSISTOR	
Q7	2SC4081(QRS)	TRANSISTOR	
Q8	DTC114WU	TRANSISTOR	
Q9	2SC4081(QRS)	TRANSISTOR	
Q10	2SA1576(QRS)	TRANSISTOR	
Q11	DTC144WU	TRANSISTOR	
Q12	DTC144WU	TRANSISTOR	
Q13	DTA124EU	TRANSISTOR	
Q14	2SA1576(QRS)	TRANSISTOR	
Q101	2SC4081(QRS)	TRANSISTOR	
Q103	2SC4081(QRS)	TRANSISTOR	
Q104	2SC3936(BC)	TRANSISTOR	
Q105	DTC144WU	TRANSISTOR	
Q106	2SC3936(BC)	TRANSISTOR	
Q107	2SC3936(BC)	TRANSISTOR	
Q108	2SC4081(QRS)	TRANSISTOR	
Q109	DTA144WU	TRANSISTOR	
Q110	2SC3936(BC)	TRANSISTOR	
Q111	2SC3936(BC)	TRANSISTOR	
Q112	2SC4081(QRS)	TRANSISTOR	
Q114	DTC144WU	TRANSISTOR	
Q115	DTA124EU	TRANSISTOR	
D1	DAN202U	DIODE	
D2	DAN202U	DIODE	
D3	DAP202U	DIODE	
D4	1SS133	DIODE	
D5	1SS133	DIODE	
D7	1SS292	DIODE	
D101	DAN202U	DIODE	
R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
R4	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R5	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
R9	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
R12	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
R13	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R14	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
R16	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
R17	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R18	NVP1301-152NZ	V.RESISTOR,NC BALANCE	
R19	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
R21	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R22	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R23	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
R25	NVP1301-472N	V.RESISTOR,PB Y LEVEL	
R26	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
R28	NVP1301-223N	V.RESISTOR,CARRIER	
R29	NVP1301-103N	V.RESISTOR,DEVIATION	
R30	NRSA63J-432N	RESISTOR	4.3kΩ,1/16W
R31	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R32	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
R34	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R39	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R42	NVP1301-153N	V. RESISTOR,EE Y LEVEL	
R43	NRSA63J-823N	RESISTOR	82kΩ,1/16W
R44	NRSA63J-334N	RESISTOR	330kΩ,1/16W
R45	NVP1301-103N	V.RESISTOR,W/D CLIP	
R46	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R47	NRSA63J-434N	RESISTOR	430kΩ,1/16W
R48	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
R51	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R52	NVP1301-222N	V.RESISTOR,REC COLOR LEVEL	
R53	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
R55	NRSA63J-681N	RESISTOR	680Ω,1/16W
R56	NRSA63J-561N	RESISTOR	560Ω,1/16W
R57	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R58	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R61	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R62	NRSA63J-101N	RESISTOR	100Ω,1/16W
R101	NRSA63J-223N	RESISTOR	22kΩ,1/16W
R103	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R104	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R105	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R106	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R107	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R108	NRSA63J-223N	RESISTOR	22kΩ,1/16W
R109	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R110	NRSA63J-561N	RESISTOR	560Ω,1/16W
R111	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R112	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R113	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R114	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R115	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R116	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R117	NRSA63J-242N	RESISTOR	2.4kΩ,1/16W
R118	NRSA63G-821N	RESISTOR	820Ω,1/16W
R119	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R120	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
R121	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R122	NRSA63J-912N	RESISTOR	9.1kΩ,1/16W
R123	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R124	NRSA63J-331N	RESISTOR	330Ω,1/16W
R125	NRSA63G-821N	RESISTOR	820Ω,1/16W
R127	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R128	NRSA63J-333N	RESISTOR	33kΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R129	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R130	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R131	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
R132	NRSA63J-681N	RESISTOR	680Ω,1/16W
R133	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R136	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R140	QRD161J-222	RESISTOR	2.2kΩ,1/6W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HG-681A	CAPACITOR	680pF,50V
C3	NCS31HG-331A	CAPACITOR	330pF,50V
C4	NCS31HJ-220A	CAPACITOR	22pF,50V
C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C6	NCS31HJ-150A	CAPACITOR	15pF,50V
C7	NCS31HJ-220A	CAPACITOR	22pF,50V
C8	NCS31HJ-680A	CAPACITOR	68pF,50V
C9	NCS31HG-121A	CAPACITOR	120pF,50V
C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C11	QCFA1HZ-473	CAPACITOR	0.047μF,50V
C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
C13	NCF31EZ-104A	CAPACITOR	0.1μF,25V
C14	QCFA1HZ-104	CAPACITOR	0.1μF,50V
C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C16	NCS31HJ-390A	CAPACITOR	39pF,50V
C17	NCS31HJ-180A	CAPACITOR	18pF,50V
C18	NCS31HJ-200A	CAPACITOR	20pF,50V
C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	NCS31HJ-330A	CAPACITOR	33pF,50V
C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
C23	QETC1HM-474	E CAPACITOR	0.47μF,50V
C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	QETC1AM-226	E CAPACITOR	22μF,10V
C27	QETC1CM-106	E CAPACITOR	10μF,16V
C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
C34	NCS31HJ-620A	CAPACITOR	62pF,50V
C35	NCS31HG-201A	CAPACITOR	200pF,50V
C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
C40	QETC1HM-105	E CAPACITOR	1μF,50V
C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
C42	NCS31HJ-101A	CAPACITOR	100pF,50V
C43	NCS31HJ-390A	CAPACITOR	39pF,50V
C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
C57	QETC1HM-105	E CAPACITOR	1μF,50V

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C70	NCS31HJ-390A	CAPACITOR	39pF,50V
	C101	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C104	NCS31HJ-390A	CAPACITOR	39pF,50V
	C105	NCS31HG-130A	CAPACITOR	13pF,50V
	C106	NCS31HJ-560A	CAPACITOR	56pF,50V
	C107	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C108	NCS31HJ-120A	CAPACITOR	12pF,50V
	C109	NCS31HJ-680A	CAPACITOR	68pF,50V
	C110	NCS31HJ-680A	CAPACITOR	68pF,50V
	C113	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C114	NCT08CH-220A	CAPACITOR	22pF,50V
	C115	NCT08CH-121A	CAPACITOR	120pF,50V
	C116	NCT08CH-330A	CAPACITOR	33pF,50V
	C117	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C118	NCT08CH-360A	CAPACITOR	36pF,50V
	C119	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C120	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C121	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C122	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C125	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	L1	PU59988-121JY	COIL	120μH
	L2	PU59988-330J	COIL	33μH
	L3	PU59988-330J	COIL	33μH
	L4	PU59988-820J	COIL	82μH
	L5	PU59988-221J	COIL	220μH
	L6	PU59153-101K	COIL	100μH
	L7	PU59988-680J	COIL	68μH
⚠	L8	PU48530-101K	COIL	100μH
	L9	PU59988-121JY	COIL	120μH
	L11	PU48530-561J	COIL	560μH
	L101	PU59988-820J	COIL	82μH
	LPF1	PELN0913	LOW PASS FILTER	
	LPF2	PELN0892	LOW PASS FILTER	
	DL1	PU60874	1H DELAY LINE	
⚠	X101	PEVB0386	CRYSTAL RESONATOR	
⚠	X102	PEVB0438-02	CRYSTAL RESONATOR	
⚠	X103	PEVB0444	CRYSTAL RESONATOR	
	CN1	PEMC0712-112	PIN HEADER,(2-13) MAIN	
	CN2	PEMC0712-112	PIN HEADER,(1-12) MAIN	
	CN3	PEMC0712-112	PIN HEADER,(1-12) MAIN	

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IF BOARD ASSEMBLY <07>

	PWBA	PB10857B-01	IF BOARD ASSY
	IC1	LA7577V	IC
	IC2	MM1111XF	IC
	IC3	XRA15218	IC
		or BA10358	IC
	Q1	2SC2001(LK)	TRANSISTOR
	Q3	2SC2636S,T	TRANSISTOR
	Q5	DTC114EU	TRANSISTOR

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q6	DTC114EU	TRANSISTOR	
	Q7	2SC2636S,T	TRANSISTOR	
	Q9	DTC114EU	TRANSISTOR	
	Q10	DTC114EU	TRANSISTOR	
	Q11	DTC114EU	TRANSISTOR	
	Q12	DTC114EU	TRANSISTOR	
	Q13	2SC4081(RS)	TRANSISTOR	
	Q15	DTC114EU	TRANSISTOR	
	Q18	2SC4081(RS)	TRANSISTOR	
	Q19	2SA1576(RS)	TRANSISTOR	
	D1	MTZ11B	ZENER DIODE	
	D2	SVC321SPA-B-1	V.DIODE	
	D4	DAN202U	DIODE	
	D5	DAN202U	DIODE	
	R1	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R2	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R4	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R5	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R6	NRSA63J-470N	RESISTOR	47Ω,1/16W
	R7	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R8	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R9	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R10	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R11	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R12	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R13	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R14	NRSA63J-470N	RESISTOR	47Ω,1/16W
	R15	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R16	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R17	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R18	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R19	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R20	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R21	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R22	QRD161J-512	RESISTOR	5.1kΩ,1/6W
	R23	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R24	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R25	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R26	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R27	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R28	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R29	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R30	QVZ3521-103	V RESISTOR,RF AGC	
	R32	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R33	NRSA63J-824N	RESISTOR	820kΩ,1/16W
	R34	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R35	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R36	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R38	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R39	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R41	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R42	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R43	NRSA63J-181N	RESISTOR	180Ω,1/16W
	R44	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R46	NRSA63J-560N	RESISTOR	56Ω,1/16W
	R47	QRD161J-105	RESISTOR	1MΩ,1/6W
	R48	NRSA63J-560N	RESISTOR	56Ω,1/16W
	R49	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R50	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R58	NRSA63J-183N	RESISTOR	18kΩ,1/16W
	R61	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R62	NRSA63J-683N	RESISTOR	68kΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R63	NRSA63J-331N	RESISTOR	330Ω,1/16W
R64	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
R65	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
R66	NRSA63J-561N	RESISTOR	560Ω,1/16W
R67	NRSA63J-471N	RESISTOR	470Ω,1/16W
R68	NRSA63J-471N	RESISTOR	470Ω,1/16W
R69	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R70	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R71	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R73	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R75	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R77	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R81	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R82	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R83	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R84	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R85	NRSA63J-473N	RESISTOR	47kΩ,1/16W
R86	NRSA63J-224N	RESISTOR	220kΩ,1/16W
R87	NRSA63J-104N	RESISTOR	100kΩ,1/16W
R88	NRSA63J-123N	RESISTOR	12kΩ,1/16W
R89	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R90	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
C2	QETF1CM-476	E CAPACITOR	47μF,16V
C7	NCB31HK-102A	CAPACITOR	0.001μF,50V
C9	NCB31HK-102A	CAPACITOR	0.001μF,50V
C10	NCB31HK-102A	CAPACITOR	0.001μF,50V
C11	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C13	QCYA1HK-102	CAPACITOR	0.001μF,50V
C15	NCB31HK-102A	CAPACITOR	0.001μF,50V
C18	NCB31HK-102A	CAPACITOR	0.001μF,50V
C19	NCB31HK-102A	CAPACITOR	0.001μF,50V
C20	QCYA1HK-102	CAPACITOR	0.001μF,50V
C21	NCT06CH-100A	CAPACITOR	10pF,50V
C22	NCB31HK-102A	CAPACITOR	0.001μF,50V
C24	QFLC1HJ-393Z	F CAPACITOR	0.039μF,50V
C25	QEK61HM-105	E CAPACITOR	1μF,50V
C26	QFLC1HJ-153Z	F CAPACITOR	0.015μF,50V
C27	NCB31HK-103A	CAPACITOR	0.01μF,50V
C28	NCT06CH-680A	CAPACITOR	68pF,50V
C29	NCT06CH-680A	CAPACITOR	68pF,50V
C30	NCT06CH-680A	CAPACITOR	68pF,50V
C31	NCS31HJ-331A	CAPACITOR	330pF,50V
C32	QEKF1HM-224	E CAPACITOR	0.22μF,50V
C33	NCF31HZ-473A	CAPACITOR	0.047μF,50V
C34	NCB31HK-102A	CAPACITOR	0.001μF,50V
C35	NCB31HK-103A	CAPACITOR	0.01μF,50V
C36	QETF1CM-476	E CAPACITOR	47μF,16V
C38	NCT06CH-150A	CAPACITOR	15pF,50V
C39	QFLC1HJ-683Z	F CAPACITOR	0.068μF,50V
C40	NCB31HK-102A	CAPACITOR	0.001μF,50V
C41	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C42	NCT06CH-120A	CAPACITOR	12pF,50V
C43	NCT06CH-101A	CAPACITOR	100pF,50V
C44	NCB31HK-103A	CAPACITOR	0.01μF,50V
C45	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C52	NCT06CH-330A	CAPACITOR	33pF,50V
C55	QEK61CM-106	E CAPACITOR	10μF,16V
C56	QEKF1CM-106	E CAPACITOR	10μF,16V
C57	NCB31HK-103A	CAPACITOR	0.01μF,50V
C59	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C60	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C61	QCYA1HK-223	CAPACITOR	0.022μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C62	NCF31HZ-223A	CAPACITOR	0.022μF,50V
C63	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C64	QEKF1CM-106	E CAPACITOR	10μF,16V
C65	QEKF1HM-474	E CAPACITOR	0.47μF,50V
C66	QEKF1CM-106	E CAPACITOR	10μF,16V
L1	PU60025-R82	COIL	0.82μH
L3	PU60025-2R0	COIL	2μH
L4	PU60025-R91	COIL	0.91μH
L5	PU59152-1R0J	COIL	1μH
L6	PU59152-1R0J	COIL	1μH
L8	PU59152-220J	COIL	22μH
L9	PU59152-100J	COIL	10μH
L10	PU59152-680J	COIL	68μH
L11	PU59152-100J	COIL	10μH
L12	PU59152-8R2J	COIL	8.2μH
CF1	PU32990-2	CERAMIC FILTER	
CF3	PU32990	CERAMIC FILTER	
CF4	PU32990	CERAMIC FILTER	
CF5	PEVB0339	C TRAP	
CF6	PEVB0537-02Z	CERAMIC FILTER	
CF7	PEVB0537-03Z	CERAMIC FILTER	
CF8	PEVB0537-04Z	CERAMIC FILTER	
CF9	PEVB0537-Z	CERAMIC FILTER	
SAW1	PEVB0589	SAW FILTER	
SAW2	PEVB0364	SAW FILTER	
SAW3	PEVB0545	SAW FILTER	
T1	PELN0669	IF. TRANSFORMER, FM DET	
T2	PELN0443-02	IF. TRANSFORMER, AFC	
T3	PELN0444-02	IF. TRANSFORMER, VCO	
JP1	PEMC0778-108Y	PIN HEADER,(1-8) MAIN	
JP2	PEMC0778-108Y	PIN HEADER,(1-8) MAIN	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

PWBA6	PB10819A6-02	AUDIO CONTROL HEAD BOARD ASSY
CN1	PU60910-107	WIRE TRAP,(1-7) MAIN

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FRONT BOARD ASSEMBLY <28>

	PWBA	PB10864B	FRONT BOARD ASSY
⚠	IC1	UPD16311GC(K)	IC
⚠		or UPD16311GC(E)	IC
⚠		or UPD16311GC(P)	IC
	IC2	GP1U581X	IR DETECT UNIT
		or HC-377J	IR DETECT UNIT
	D1	1SS132Y	DIODE
		or 1N4148M	DIODE
	D2	1SS132Y	DIODE
		or 1N4148M	DIODE
	D3	1SS132Y	DIODE
		or 1N4148M	DIODE

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
D4	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D5	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D7	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D11	RD4.7ES-T1B2	ZENER DIODE	
D12	SLC-22VR3F	LE DIODE,OPERATE	
D13	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D14	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D17	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D18	1SS132Y	DIODE	
	or 1N4148M	DIODE	
D31	11ES2	DIODE	
R1	QRD161J-333	RESISTOR	33kΩ,1/6W
R2	QRD161J-333	RESISTOR	33kΩ,1/6W
R3	QRD161J-333	RESISTOR	33kΩ,1/6W
R4	QRD161J-333	RESISTOR	33kΩ,1/6W
R5	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R6	QRD161J-472	RESISTOR	4.7kΩ,1/6W
R7	QRD161J-102	RESISTOR	1kΩ,1/6W
R8	QRD161J-333	RESISTOR	33kΩ,1/6W
R9	QRD161J-103	RESISTOR	10kΩ,1/6W
R10	QRD161J-103	RESISTOR	10kΩ,1/6W
R11	QRD161J-331	RESISTOR	330Ω,1/6W
RA1	QRB045J-333XF	RESISTOR ARRAY	33kΩ,4W
C1	QERF0JM-336	E CAPACITOR	33μF,6.3V
C3	QERF1HM-106	E CAPACITOR	10μF,50V
C4	QCSB1HJ-330	CAPACITOR	33pF,50V
C5	QCSB1HJ-330	CAPACITOR	33pF,50V
C6	QETC0JM-227	E CAPACITOR	220μF,6.3V
L1	PU48530-101J	COIL	100μH
S1	PESW0525-02Z	TACT SWITCH,(CH+)	
S2	PESW0525-02Z	TACT SWITCH,(CH−)	
S3	PESW0525-02Z	TACT SWITCH,OPERATE	
S4	PESW0525-02Z	TACT SWITCH,TIMER	
S7	PESW0525-02Z	TACT SWITCH,PLAY	
S8	PESW0525-02Z	TACT SWITCH,STOP	
S9	PESW0525-02Z	TACT SWITCH,SP/LP/EP	
S11	PESW0525-02Z	TACT SWITCH,REC/ITR	
S12	PESW0525-02Z	TACT SWITCH,PAUSE	
S15	PESW0525-02Z	TACT SWITCH,CH SET	
S16	PESW0525-02Z	TACT SWITCH,STORE	
S17	PESW0525-02Z	TACT SWITCH,C.SYSTEM	
S20	PESW0525-02Z	TACT SWITCH,A/M/BW	
S24	PESW0525-02Z	TACT SWITCH,PROGRAM	
S32	PESW0525-02Z	TACT SWITCH,VISS FF	
S36	PESW0525-02Z	TACT SWITCH,VISS REW	
FDP1	PEDP0098-04	FLUORESCENT DISPLAY PANEL	
HD1	PQM30038-6	LED HOLDER,D12	
HD2	PQ34951	FDP HOLDER(L)	
HD3	PQ34952	FDP HOLDER(R)	
CN1	PEMC1101-109	CONNECTOR,(1-9)MAIN	

#△ REF No.	PART No.	PART NAME, DESCRIPTION	

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PRE/REC AMP BOARD ASSEMBLY <43>

SLD1	PQ21512	SHIELD FRAME,PRE	
PWBA	PB10854H	PRE/REC BOARD ASSY	
IC501	AN3389SBNS-XE	IC	
	or AN3389SB-XE	IC	
Q503	2SC4081(QRS)	TRANSISTOR	
Q504	2SC4081(QRS)	TRANSISTOR	
Q505	2SA1576(QRS)	TRANSISTOR	
Q506	2SC4081(QRS)	TRANSISTOR	
Q507	2SC4081(QRS)	TRANSISTOR	
Q512	DTC114WU	TRANSISTOR	
Q513	DTA114WU	TRANSISTOR	
Q514	DTA124EU	TRANSISTOR	
Q517	DTA114WU	TRANSISTOR	
Q518	DTA114WU	TRANSISTOR	
Q527	DTC144WU	TRANSISTOR	
D502	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D505	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
D508	1SS133	DIODE	
	or 1N4148M	DIODE	
	or MA165	DIODE	
D509	1SS133	DIODE	
	or MA165	DIODE	
	or 1N4148M	DIODE	
R509	QRSA08J-432YN	RESISTOR	4.3kΩ,1/10W
R510	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R514	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R515	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R516	QRSA08J-751YN	RESISTOR	750Ω,1/10W
R517	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R518	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R519	QRD161J-391	RESISTOR	390Ω,1/6W
R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W
R522	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R523	QRD161J-222	RESISTOR	2.2kΩ,1/6W
R524	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R525	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R526	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R527	QRSA08J-561YN	RESISTOR	560Ω,1/10W
R528	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R531	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R532	QRSA08J-302YN	RESISTOR	3kΩ,1/10W
R536	NRVA62D-433N	RESISTOR	43kΩ,1/16W
R537	QRSA08J-124YN	RESISTOR	120kΩ,1/10W
R539	QRD161J-334	RESISTOR	330kΩ,1/6W
R541	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R542	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R543	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R544	QRSA08J-301YN	RESISTOR	300Ω,1/10W
R545	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R546	QRD161J-0R0	RESISTOR	0Ω,1/6W
R548	QRSA08J-154YN	RESISTOR	150kΩ,1/10W
R550	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R551	QRSA08J-105YN	RESISTOR	1MΩ,1/10W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R552	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R554	QRSA08J-391YN	RESISTOR	390Ω,1/10W
C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C505	QCVB1CN-103	CAPACITOR	0.01μF,16V
C506	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C507	QCSA1HJ-331	CAPACITOR	330pF,50V
C508	QCSA1HJ-150	CAPACITOR	15pF,50V
C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C510	QCSA1HJ-270	CAPACITOR	27pF,50V
C511	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C512	QCTA1CH-220	CAPACITOR	22pF,16V
C513	QCSA1HJ-471	CAPACITOR	470pF,50V
C514	QCTA1CH-120	CAPACITOR	12pF,16V
C515	QCTA1CH-4R0	CAPACITOR	4pF,16V
C516	QCC11CJ-104	CAPACITOR	0.1μF,16V
C517	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C518	QCSA1HJ-391	CAPACITOR	390pF,50V
C521	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C522	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C523	QCYA1HK-333	CAPACITOR	0.033μF,50V
C524	QCSA1HJ-680	CAPACITOR	68pF,50V
C525	QCSA1HJ-560	CAPACITOR	56pF,50V
C526	QCYA1HK-333	CAPACITOR	0.033μF,50V
C527	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C528	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C529	QCYA1HK-333	CAPACITOR	0.033μF,50V
C530	QCSA1HJ-680	CAPACITOR	68pF,50V
C531	QCSA1HJ-560	CAPACITOR	56pF,50V
C532	QCYA1HK-333	CAPACITOR	0.033μF,50V
C533	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C534	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C536	QER61CM-476	E CAPACITOR	47μF,16V
C537	QER60JM-476	E CAPACITOR	47μF,6.3V
C540	QCSA1HJ-470	CAPACITOR	47pF,50V
C541	QCSA1HJ-390	CAPACITOR	39pF,50V
C542	QFV11HJ-104	F CAPACITOR	0.1μF,50V
C543	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C545	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C549	QCYA1EK-104	CAPACITOR	0.1μF,25V
C550	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C551	QCTA1CH-560	CAPACITOR	56pF,16V
C554	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C556	QCSA1HJ-1R0	CAPACITOR	1pF,50V
C558	QCT30CH-8R2	CAPACITOR	8.2pF
C559	QCTA1CH-7R0	CAPACITOR	7pF,16V
L501	PU48530-470J	COIL	47μH
L503	PU48530-101J	COIL	100μH
L504	PU59152-560J	COIL	56μH
L505	PU59152-220J	COIL	22μH
L506	PU59152-470J	COIL	47μH
L507	PU59152-470J	COIL	47μH
L508	PU59152-121J	COIL	120μH
L509	PU59152-330J	COIL	33μH
L510	PU59152-180J	COIL	18μH
CN501	PEMC1056-118	CONNECTOR,(2-19) MAIN	
CN502	PEMC1004-006	CONNECTOR,(1-6) UPPER DRUM	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	

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DECK TERMINAL BOARD ASSEMBLY <51>

	PWBA1	PB10819A1-03	DECK TERMINAL BOARD ASSEMBLY
⚠	IC1	BA6418N	IC
⚠		or XRA6418N	IC
	Q2	PT491F	END SENSOR
	D1	SIR-381SB3FM	LE DIODE
	D2	RD6.2ES-T1B2	ZENER DIODE
		or MTZ6.2BT-77	ZENER DIODE
	R1	QRD161J-102	RESISTOR 1kΩ,1/6W
	R3	QRD161J-331	RESISTOR 330Ω,1/6W
	R4	QRD161J-820	RESISTOR 82Ω,1/6W
	R6	QRD161J-331	RESISTOR 330Ω,1/6W
	R7	QRD161J-332	RESISTOR 3.3kΩ,1/6W
	C1	QCVB1CM-103	CAPACITOR 0.01μF,16V
	C3	QETA1CM-227	E CAPACITOR 220μF,16V
	PS1	PS5705HR	PH INTERRUPTER
	PS2	PS5705HR	PH INTERRUPTER
	WR1	PEWR0728-01-02	PARALLEL WIRE
	CN1	PEMC0915-018	FFC CONNECTOR,(1-18) MAIN
	CN2	PU60642	7PIN CONNECTOR,(1-7) CAP MDA
	CN3	PU60640	4PIN CONNECTOR,(1-4) CASS HOUSING
	CN5	PU60910-2	CONNECTOR,(1-2) LOADING MOTOR

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CASSETTE HOUSING BOARD <56>

	PWBA3	PB10819A3	CASSETTE HOUSING BOARD ASSY
	Q2	PN268VI	PHOTO TRANSISTOR
	C1	QCVB1CN-103	CAPACITOR 0.01μF,16V
	S1	PESW0589	PUSH SWITCH
	CN2	PU60639	4PIN SOCKET

SECTION 6
TECHNICAL INFORMATIONS

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	P. DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
2	FM S. CURVE	IN	TUNER AUDIO TUNING CHECK
3	AFC S. CURVE	IN	TUNING CHECK
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	VHF-H	OUT	BAND SELECT (VHF-H: H)
15	VHF-L	OUT	BAND SELECT (VHF-L: H)
16	UHF	OUT	BAND SELECT (UHF: H)
17	A. MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
18	M. CE	OUT	MOMORY IC CHIP ENABLE
19	M. DATA	IN/OUT	MEMORY IC DATA
20	S CLK	OUT	SERIAL DATA CLOCK OUTPUT
21	EXP T DATA	OUT	TUNING CONTROL SERIAL DATA OUTPUT
22	TUP FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	START S.	IN	LEADER TAPE DETECT(DETECT ON:L)
25	CASS	IN	CASSETTE SENSOR (SENSOR ON:L)
26	LSA	IN	MECHANISM MODE DETECT
27	LSB	IN	MECHANISM MODE DETECT
28	REC SF	IN	REC SAFETY SW DETECT (SW ON:L)
29	END SENS	IN	TRAILER TAPE DETECT(DETECT ON:L)
30	CAP REV	OUT	CAPSTAN MOTOR CONTROL (FWD:H/REV:L)
31	H SEL	OUT	HEAD SELECT CONTROL(SP:L/LP:M/EP:H)
32	A/M/S	OUT	PRE/REC CIRCUIT CONTROL(AUTO:M/MANUAL:H/S&S:L)
33	REC	OUT	REC MODE:H
34	REC ST	OUT	REC START:H
35	HRECST(H)	OUT	HiFi AUDIO REC START:L
36	NTSC SP(L)/ND(L)	OUT	NTSC SP MODE:L/NORMAL AUDIO DETECT (NORMAL AUDIO:L)
37	AFC DEF	OUT	AFC CONTROL (AFC OFF: L)
38	V. MUTE	OUT	VIDEO MUTE CONTROL (MUTE ON: H)
39	LCM1	OUT	LOADING MOTOR DRIVE(1)
40	LCM2	OUT	LOADING MOTOR DRIVE(2)

Table 6-1-1-A SYSCON CPU pin function (1/2)

6.1.2 Syscon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	JSA	IN	JOG PULSE INPUT(A)
42	JSB	IN	JOG PULSE INPUT(B)
43	STL	IN	SHUTTLE SWITCH
44	KILLER CTL	OUT	B/W CONTROL
45	VPCTL	OUT	V. PULSE ADDITION TIMING CONTROL
46	S/L/E CTL	OUT	SP/LP/EP MODE CONTROL
47	YNR CTL	OUT	PICTURE CONTROL (YNR CTL:L)
48	MESECAM DET.	IN	MESECAM DETECT(PAL:H)
49	COLOR CTL	OUT	NC
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	MUSIC DET	IN	NC
52	CTL P	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	V. SYNC	IN	V SYNC INPUT for SIGNAL DETECT
54	EXP V. DATA	OUT	VIDEO CONTROL DATA OUTPUT
55	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/MECHACON:H)
56	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	V. UP(H)	OUT	MOTOR DRIVE VOLTAGE SELECT (M17V:H)
65	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
66	PCTL(H)	OUT	POWER CONTROL(POWER ON:H)
67	CPLS	IN	INDEX CONTROL
68	PWM	OUT	CHANNEL DATA
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	PROTECT	IN	POWER PROTECT DETECT (POWER OFF:L)
71	D. FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	PAUSE IN	IN	PAUSE CONTROL(PAUSE ON:L)
74	ECHO EVR	OUT	NC
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	D. V. DET	IN	DRUM VOLTAGE DETECT
78	A. LEVEL L	IN	NC
79	A. LEVEL R	IN	NC
80	SYNC DET	IN	V. SYNC DETECT

Table 6-1-1-B SYSCON CPU pin function (2/2)